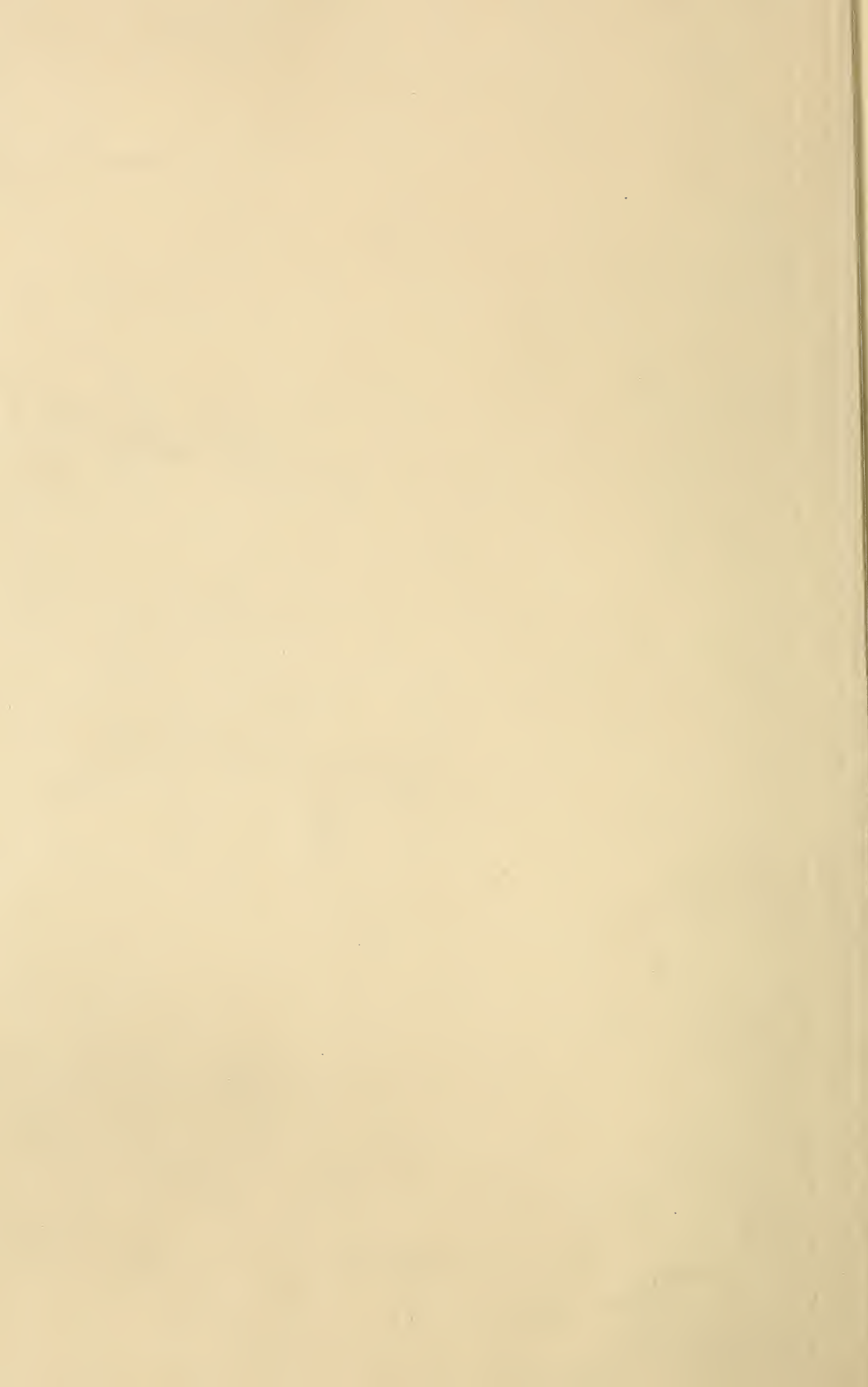


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No. 11.



MAY 18, in apple-bloom, I counted 188 bees in a minute entering a hive, and some got in without being counted. A weak colony had 30 in a minute.

F. A. GEMMILL reports in *C. B. J.* that he wintered a very strong colony on four L. combs of sealed honey. They wintered extra well, showing little desire to fly after $3\frac{1}{2}$ months' confinement.

SWEET CLOVER grows luxuriantly at the marble quarries in Vermont on heaps of waste where it's nothing but marble to the depth of 20 feet, says J. E. Crane, in *Review*. No wonder lime is recommended for sweet clover.

J. E. CRANE thinks the swarming propensity can be bred out of bees with less labor and time than it has taken to get non-sitting hens. *Review*, 136. The simple fact that bees differ greatly as swarmers makes the case look hopeful.

HASTY says in *Review* he won't have his picture taken, because when he did the picture always looked sleepy. The idea of a man looking sleepy who writes so wide-awake! Say, Hasty, you'll have to show us the picture if you don't want your reputation for veracity shattered.

A SCREWDRIVER is too thick and blunt to take off supers. I had one ground sharp, the bevel running back more than an inch, and it is tiptop. But I'm ready for a better general tool. [Such a screwdriver would be far better than one with the regulation point, I am very sure.—ED.]

"THE INDICATIONS are that there is to be a return of good seasons," says Editor Hutchinson. Quite possibly, my esteemed friend; but you don't know a thing more about it than when you thought they were gone for good. [But, "allege samee," we will hope friend Hutchinson is right.—ED.]

FULL EIGHT DAYS after a queen is shut away from a brood-comb, every cell of brood is sealed, says Aikin, *A. B. J.*, 277. That doesn't agree with the common statement that

bees are fed 6 days; but some of the best authorities now give 5 days as the time of feeding.

WHEN TRYING TO EXPLAIN how a queen can see to lay in the right place on the opposite side of the comb, why not decide that she simply takes the warmest spot for her laying? [There may be something in this.—ED.]

"THE MAN who rides hobbies and runs after fads in bee culture will have a lean bank account," says L. W. Lighty, in *American Gardening*. Well, yes, if he does too much at it; but if he steers entirely clear of hobbies and fads for the space of 20 years, his bank account may be still leaner.

GERMAN-AMERICANS who prefer to read in their beloved native tongue will be glad know that a bee-book with American methods has been written and published in the German language by J. F. Eggers, Grand Island, Neb. Except the statement that a queen takes 16 to 17 days from the egg, it is up to date.

"OUR GIRLS will fill an Ideal in less time than they will a T super."—Footnote, p. 388. Would you mind telling us, Mr. Editor, how long it takes them to fill a T super? [We have not kept any record, doctor. All we know is, one may be filled in less time than the other. I will ask them to keep track next time.—ED.]

B. A. HODSELL says it is a sad mistake to cut alfalfa before it blooms, *A. B. J.*, p. 285. About 20,000 steers are brought into his Arizona valley annually, to be fed on alfalfa hay, and stockmen agree that the hay fattens best when cut a week after blooming. When cut in bloom it is eaten greedily, but is too washy to fatten satisfactorily; and if cut when the seed is nearly ripe it is too woody.

I AM ASKED by the editor, p. 378, to explain why sugar and honey, when eaten, produce different effects upon the mucous membrane of the nostrils. I should hardly have the spirit of a true bee-keeper if I were not willing to impart information, and I'm glad the day is past when the medical profession think it necessary to surround themselves with an air of secret mystery. I would just enjoy, Mr. Editor, taking up the space to explain the whole matter, but really I don't know, myself. [Doctor, you are provoking.—ED.]

MY BOTTOM STARTERS in sections are $\frac{5}{8}$. The bees seem to gnaw down a shallow starter more. I have some trouble with starters curling over, but not much. There's $\frac{1}{4}$ inch or less between top and bottom starters, and the first thing the bees do is to fasten the two together. Then they can't topple over. [Starters $\frac{5}{8}$ inch high! In our locality every one would tumble over. Say, doctor, do you use brood foundation, or what, for these bottom starters?—ED.]

I'M AFRAID, Ernest, you'll be misunderstood in that footnote, p. 391. There's no essence, not even the smallest dilution, of Christianity in the most intelligent selfishness, so long as it has only self in view. [Perhaps so; but in the sense in which I use the word "selfishness" it is a little different from the sense in which it is ordinarily used. I meant the kind of selfishness—well, if I go to splitting hairs on fine distinctions I am afraid I shall be more misunderstood than ever.—ED.]

WHEN I GOT some 18-to-the-foot foundation I said, "Why in the world have they sent me just common thin foundation?" and I had to look some time before I realized that the secret was in the very thin septum. At a hasty glance it looks just like common thin foundation. It is a big thing, if it works right. [Yes, the 18-foot article looks like any ordinary thin; but there is a decided difference in the thickness of the bases when tested by a delicate micrometer. Of course, the scales show a difference.—ED.]

R. C. REED, 30 miles south of Medina, who has now 150 colonies, has been using tall narrow sections ($5\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$) for 13 years without separators, and he thinks he has not more than 100 bulged sections in a ton. W. B. Ranson, the man who uses no separators, and depends on level hives, had 21 bulgers in 1000; but 7 of these were baits. Is it just possible, if we knew how, we could discard both fence and separator? [Yes, I think it barely possible that the expert bee-keeper *might* do so; but the beginner and the careless, never.—ED.]

"I COVER my sections with an inner cleated cover with a bee-space. The wax in sections is sometimes brought almost to the melting-point beneath single board covers."—R. C. Aikin, *American Bee Journal*, 277. Every now and then it comes to light that some practical bee-keeper is using a cover with dead air-space, covered with tin, and it seems a little strange that manufacturers offer nothing of the kind. [Any bee-keeper may get the same thing by taking our ordinary ventilated cover and closing up the two side openings. This would leave the dead air space over the thin cover. But is not ventilation preferable to dead hot air?—ED.]

HONEY SHORTCAKE.—Sift together three cupfuls of flour, two teaspoonfuls of baking-powder, and a teaspoon of salt. Put two rounded tablespoonfuls of butter into the flour, mix with one and one-half cupfuls of milk. Roll out quickly on a slightly floured board, and bake in a quick oven for twenty minutes. When baked, split open while hot,

using two forks placed back to back; spread the lower half with butter, and the upper half with a half-pound of finely flavored honey. If the honey is too hard to spread easily it should be slightly warmed. Let the shortcake stand for a few moments after spreading, that the honey may melt gradually and the flavor permeate the cake. Serve with milk, or cream if you have it.—*Chicago Record*.

JUDGE HASTY has pronounced sentence of fine and imprisonment on E. R. Root for libel, accusing said Hasty of consuming an unreasonable amount of honey, when he used only 12 ounces daily, 2 meals, 6 ounces each. He now meditates coming down to one meal a day. Let's see—say 3 months at 6 ounces per day, about 34 lbs. of honey. Might cost less to buy a pistol, Hasty. [If Hasty can eat even 12 ounces of honey daily, I will not retract—not one bit. About 2 or 3 ounces a day, 3 or 4 times a week, would be a great plenty for me.—ED.]

IT'S ONLY FAIR TO SAY that I've had a good many colonies swarm with two stories, sometimes with little but empty combs in the lower story. [Yes, doctor, but hadn't the colony got into the craze for swarming *before* you gave them the extra room? Here is a condition: A colony at our out-yard has a clipped queen. It has tried twice, neighbors tell me, to swarm. I went down, scattered their brood in two stories, and gave them empty combs between the frames of brood; destroyed all the queen-cells, and yet the neighbors tell me these bees have been trying to swarm just the same; that is, they fly out and then back again. But if this colony had in the first place been in quarters large enough to hold them, so that the notion of swarming did not get possession of them, they would, if I had gone down and given them more room, have never thought of swarming the whole season. My experience is that, if a colony gets into the notion of swarming, it is almost impossible to get that notion out of them until they have had a good swarming-out, and landed in new quarters.—ED.]

W. B. RANSON, instead of using a single bait in a super, proposes to use a full super of baits; then when the colony gets started on the second super (with foundation), move the bait-super to a new hive, and so on. It will probably work all right with enough baits, providing colonies are not equal in strength. And it's possible that it will not be necessary to get a colony started in empty super before removing baits; for, once started in bait-super, they might promptly occupy any thing taking its place. [I believe Ranson's plan is all right. I have noticed this: That, when a colony once gets started in the first super, it seems to be much easier for it to go into other supers, whether bait is used or not; and, right here, this disinclination on the part of the bees to go into the ordinary comb-honey supers containing little bits of rooms, as it were, boxed off tight, led me to believe that the bees might be more ready to accept a comb-honey super permitting free passageways back and forth and sidewise, on the principle of the

plain section and fence. Now, understand I do not say positively that the bees will go into such a super sooner. It is quite necessary for me to be emphatic on these points, as some chap may be setting up another man of straw, and then knocking it over again.—ED.]



RIPENED HONEY.

Dan White's Ripened Honey; Extracting Before Honey is Sealed; More Hot Shot.

BY DELOS WOOD.

On page 125, Feb. 15, 1898, Dan White complains of all bee-keepers who extract honey before the bees have sealed it, and gives hot shot, but fails to point his gun in the proper direction. His article is a good one, and will bear careful study, even by himself. There have been so few writers who advocate extracting unsealed honey that I can not call the names of any of them. I, for one of those hit by Mr. White's bombs, am willing to join hands with him in condemnation of putting thin, watery, or unripe honey on the market. "The everlasting footnote" to Mr. White's article says we should "agree not to put on the market extracted honey weighing less than 11 lbs. to the gallon." That is too thin and watery for me, Mr. Editor. Honey that does not weigh 12 lbs. to the gallon is not well ripened. Weigh that "over at the house" and you will find it about 13 lbs.

On p. 249, April 1, in "California Echoes," J. H. Martin gives a kick especially aimed at the California bee-keepers who extract before sealing. His paragraph saying "Thin honey is liable to sour, and more or less of it will be a dead loss, the flavor raw and unpalatable, etc.," is correct; and any one selling such an article will soon ruin his market. In another place he says, "It is pure shiftlessness to produce unripe honey." This, if taken just as it reads by itself, can not be objected to; but, taken in connection with what precedes it, I infer that it is a mere kick at extracting before the honey is sealed.

Now, in reply to both of these articles I would ask, "Who has ever advocated putting unripe honey on the market?" I never have, and am willing that every buyer and user of honey may know that I advocate and practice extracting honey before it has been sealed by the bees; but I have never sold a pound of unripe honey since I quit selling comb honey. I have never sold a can of extracted honey that did not weigh 12 lbs. or over to the gallon. In a lot of two tons, sent to a commission house in San Francisco a few years ago, in 5-gallon tin cans, the net-weight returns showed 63 lbs. per can. This honey was taken as fast as the bees stored it, not waiting for any to be sealed, and ripened in the sun, and

sold a fraction above market quotations. I always put my name and address on every case shipped, and have never received one complaint of sour or unripe honey.

Who sells unripe, watery, or sour honey? It is those who wait for the bees to seal their honey. Then they honestly think they can join Dan White's society. Bees are like some farmers. When work is pressing, every thing is done in a hurry. Example: The farmer in the East, where summer rains abound, has a large lot of hay cut, and a rain is threatened. That hay is hustled into the barn as soon as he thinks it will do. If he fears it is not well cured he perhaps will dose it with salt, and in goes another load, and so on until the last is well sprinkled with rain. Result: That hay heats, sweats too much, molds, and is unfit for market.

Bees are rushed by the enormous honey-flow at times, and they go it pell-mell, slap, kick 'em off, get done quick, *a la* Coggshall, and seal their honey before it has had time to evaporate or ripen. The comb-honey man takes off the nice ripe honey (?) while it is white, and sells the watery stuff. The man who works for extracted has waited until all is sealed, and he honestly thinks it is well ripened. He uncaps and extracts, and runs the honey direct from the extractor into the can, and sells it, and these are the ones who are selling unripe honey weighing 11 lbs. per gallon. When honey is sealed it ripens very slowly, and this is why E. R. Root once advocated leaving it on the hive until travel-stained.

I have cut open well-sealed honey, stored in May and June, and kept on the hive until winter, that would run from the combs almost as fast as water, and would smell strongly of vinegar. Was it well ripened?

It would take a long article to tell what constitutes well-ripened honey, and how to produce it, and I will not attempt it at present, as you may condemn this to the waste-basket; but if you do not, you may put a No. 10 double-soled footnote to it.

In conclusion I wish to say that, in my opinion, any one who runs honey direct from the extractor into the cans, no matter if every cell is sealed, is liable at times to put unripe honey on the market.

Santa Barbara, Cal.

[There is a good deal of truth in what you say. May be it is all truth. If so, it only goes to show that your conditions, so far as ripening honey is concerned, are different from what they are in Ohio. I do not think I ever saw the time when sealed honey in Ohio was unripe; but I can imagine that the bees might pour the honey into combs pell-mell, and seal it before it is really ripe. If that were the case, then of course the honey ought not to go from the extractor into the marketing-cans or barrels, but should, on the other hand, as you imply, go into evaporating-cans, there to remain until it has attained the proper consistency.]

You ask me to weigh that honey "over at the house," that you think will run about 13

lbs. I did do that, friend Wood, and just as it comes from the can, and presumably as it came from your people on the Pacific slope; but I find it weighs 12 lbs. to the gallon. I thought it would go nearly 13; but even at the 12-pound mark it is very nice and thick. I could get it to the 13-pound mark by letting it stand in an open vessel for days at a time.

Why, friend Wood, we in Ohio consider 11 lbs. a fair specific gravity; and in our climate I doubt whether it is possible to ripen it in the hive so it will be thicker than this. We can run it up to 12 lbs., and perhaps 13, by letting it stand in a dry place in an open vessel. During the last three or four weeks we have been having a spell of weather during which the honey would get *thinner* rather than thicker. Nearly every thing has been reeking with dampness from frequent rains, fogs, etc. This condition does not generally prevail; but our atmosphere is by no means as dry as it is in California, and I doubt whether it is possible for us to raise the specific gravity of honey much above the 11-pound mark.

In speaking of California honey, I never saw any thing yet that came from cans that was thicker than 12 lbs. to the gallon. I am not saying that you West Coasters can not or do not produce 13-pound honey; but I am one of those chaps who are very fond of thick waxy honey; and if you have something that runs 13 and 14 lbs., I wish you would send me a sample. I will pay express, and give it the best write-up I know how.—E.D.]

FEEDERS.

Entrance Feeders for Spring Feeding.

BY F. BOOMHOWER.

It is out of season for the use of feeders now, as bees in this latitude are all packed for winter, and, of course, they were provided with sufficient stores for winter; but when work does not need doing is the time to think and prepare for the time when it does need doing; and when spring comes, and when feeding is needed, we shall be ready for it.

Success in feeding depends mostly on the feeder used. Of course, if we save over sealed combs of honey a feeder is of no consequence, as it is a very easy matter to lift out the empty combs from the needy colonies and replace them with full combs of honey; but when we have not the combs of honey, and feeding is necessary, a feeder of some kind will be needed.

I do not think that feeding done by combs is as good as entrance feeding, for stimulating or inducing the queen to lay; for if the bees have to carry it from the entrance it seems more natural, and has more of a tendency to set the queen to laying more rapidly. I think a large per cent of the feeding done results in nearly as much injury as good.

I know a bee-keeper, and one who thinks he is a practical one too, and I have seen him feed colonies of bees by pouring as much as a quart of extracted honey on top of the brood-frames, and allowing it to run down over the

cluster of bees, besmearing them all over; and I have known of instances where the bees have left the hive, and clustered under the bottom-board until the honey had been drained out and cleaned up by the bees. Now, if practical bee-keepers will do such work I should like to know what you call an impractical one.

Feeders must be so constructed that the bees can not possibly get daubed with the feed. I once thought that was easy to accomplish, but it was not so easy as I thought.

The most common kind of feeders are those with slats and floats. Take any of this kind of feeders, and even combs filled with feed, and watch the bees as they all hurry to get a share. At first, when only a few are feeding, they take their time and sip leisurely, as if they had lots of time and room. Soon they gather faster; the number increases, and they commence to scramble and tumble over each other, falling into the feed, and getting daubed and smeared. Those at the bottom, which were there first, get pressed and crushed down into the feed; and as each bee makes its escape up through the mass it wipes its wings, feet, and body off upon its companions' fine clothes, and this process is kept up until the whole mass becomes smeared and daubed up with the disagreeable sticky feed.

I will explain a feeder that I believe to be the best adapted for this kind of feeding. It allows the syrup to be fed a little at a time; and when the feeders are empty they can be seen at a glance without looking into the hive and disturbing the bees. In an apiary of 100 colonies you can tell what feeders are empty, or the amount they contain, in almost a minute's time, just by glancing down the rows and walking across one end of the apiary.

For spring feeding, an entrance feeder is altogether the best. A Mason fruit-jar holding two quarts, with a tin screw top, and by perforating the top with small holes made with an awl; a thin box about 1½ inches deep and 5 inches square, with one end open, with a tin bottom, and projecting strips at the open end to project into the entrance; a wooden top with a circular hole cut in large enough to permit the top of the jar to just fit in; the projecting strips made to fit snugly in the entrance, will hold the feeder in place. No robber bees can get at the feed without going into the hive to get it.

I think Mr. Boardman is the originator of this feeder, or one something like it, and it is old, but it is a good one, and worthy of being described again.

For feed, many use an equal proportion of granulated sugar and water, the sugar being made to dissolve by rapid stirring; but when we can get extracted honey as cheap as sugar, I think it more profitable to use the later or extracted honey. Some may think it unnecessary and unprofitable to feed when they already have honey (I mean in the latter part of the spring); but by feeding at the proper time it stimulates them and sets the queen to laying more vigorously, and that means a lot of bees, and a lot of bees means a lot of honey when the flow comes, and certainly we should

not be out any thing, for what we feed the bees makes them put the same amount in the surplus, and practically makes us a gainer instead of a loser, if we get for comb honey 8 cents per lb., and feed for $4\frac{1}{2}$ cents. I do not mean to feed them to have them put the same feed into the surplus, but the feed goes into the hive-body, and fills up the vacant room; and when the flow comes they put into the surplus what they would have put into the hive-body if they had not been fed; and if we can get the hive-body filled by feeding we can get them to put into the surplus the whole amount they gather.

Some may think that, by feeding, they will fill the brood-nest and crowd the queen; but if there is a flow of honey, and surplus room to store it, they will give the queen abundant room for laying.

Gallupville, N. Y.

[The feeder mentioned by friend Boomhower is the same in principle as the Boardman, with this difference, that Mr. Boomhower punches holes in the cap, and Mr. Boardman uses the Hains idea; namely, letting the cap down into a shallow tray. Having tried both methods, we prefer the Hains plan.]

The subject of feeding and feeders may seem a little out of date at this time of year; but in many localities I believe feeding can be practiced to good advantage. In some cases colonies run almost from hand to mouth for stores. They are then liable to cut down on brood-rearing. If, on the other hand, they are fed a little every day, the hive will be filled with brood, and the brood-nest with honey or syrup, as the case may be. When the harvest comes on, the best and choicest honey necessarily has to go into the supers, because there is no other place to store it; and, moreover, there is a big force of young bees, or ought to be, ready for the fields. Without this extra feeding the colony in question might have been only half as strong, and ill prepared for a flow of honey.—ED.]

SMOKER FUEL.

Setting down to Work with Bees.

BY MRS. L. HARRISON.

Mr. Editor:—You want to know what we burn in our smokers, do you? Being a woman, old cotton cloth is in my line, so I roll it up into a compact roll, and tie it at short distances, so if one tie burns off there is another near, preventing its unrolling. When I clean house, and overhaul my closets I make enough to last during the season. Other fuel may be better, but I follow the advice of the poet Longfellow who says:

Take whatever lieth nearest you,
And make from this thy work of art.

SITTING AT WORK.

Yes, I do. I first take a smoker that has previously been cleaned, light my roll of rags, making a good smoke; get a tool to lift up the frames, and proceed to a hive. We use

the eight-frame Langstroth, with a cap with a separate cover. First take off the cover, then the cap, and put the cover on it at the side of the hive, and sit down. If I've been careful, the bees have not been disturbed, and then I lift up a corner of the sheet and give them a puff of smoke as an invitation to be civil. If I stood up, my back would soon ache. I should drop things, get nervous, and the bees would soon find it out, and I should soon have a pretty kettle of fish. I live in a city with near neighbors, and I have to be very careful not to irritate my bees. If I lived far away from other people I should not care how cross they were provided they were good honey-gatherers. Sitting down I take things easier, am not in such a hurry; take time for the bees to get away, and they soon act as if they believed I didn't want to hurt them.

SELLING HONEY.

During the winter, honey sold from $12\frac{1}{2}$ to 13 cts. per pound in this city; later on, a lot was shipped from California to the commission houses, which they offered for 10 cts. per pound. Bro. Root, do Californians eat any honey? Did you see it on their tables when you were there?

If honey ever becomes a staple article of food, producers will have to turn peddlers. See how persistent some manufacturers are to introduce their wares; for instance, the yeast-makers. Year after year they distribute free samples. When I returned from Florida I found considerable honey in the honey-house. I asked the milkman, who comes daily the year round, if he had had honey lately. The man who laid the carpets, I told to take some honey as well as money for his work; some honey along with money for furniture; the milliner also. In this way I find customers who buy of me yearly.

Who ever saw honey on a bulletin-board at a restaurant, or on a bill of fare at a hotel? Why should not extracted honey be an army ration, as well as syrup? All that I buy supplies of must be sweetened with honey; so must my dentist, chiropodist, Turkish-bath assistant, minister, and I'll feed the tramp who wants a meal on honey. When I've created a demand for honey, along will come a fellow and undersell me. Early last fall I went to a grocer I had been in the habit of supplying. I said, "I see you have honey." It was the choicest of honey in a neat painted case. "Oh, yes! a fellow brought this from a near town, and offered it for eight cents per pound. I didn't jew him at all; it was his own offer, and that honey was worth 14 cts. per pound."

Our country is great. I gathered beautiful goldenrod on Black's Island, in St. Joseph's Bay, Florida, on April 4th. The China-berry trees were in full bloom there also. Pigs on the island were fat by rooting out and eating artichokes.

Peoria, Ill.

[Dear Mrs. H., I did find honey on the tables in California; that is, when I visited a bee-keeper they almost always had some nice honey. But I did not find it at the hotels and

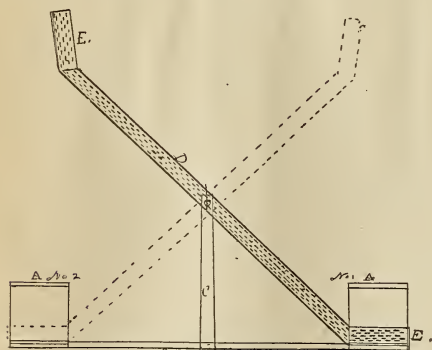
restaurants. I did not see it on the bulletin-boards. There were all sorts of syrups, and stuff called maple molasses, but not honey; and yet in my opinion—that is, it is my opinion just now, and I may change—the water-white mountain-sage honey of California is the finest in the world; and it agrees with me the best of any sweet I ever got hold of. I have been eating it considerably this spring, and it agrees with me better than any other sweet, especially if I do not eat more than, say, one teaspoonful at a meal. We have just had a carload from R. Wilkin. Even in hot weather, if you dip your spoon into the dish all over you can get quite a good lot of honey at what is called a spoonful. It is so well ripened that it is thick when put on the table even in June, and it does not candy. I think it is a little more digestible after it has been sterilized by heating it almost to the boiling-point. Why the California hotels, restaurants, and boarding-houses should not consume a larger part of their own product is a conundrum. Perhaps if the honey-producers of California would “sweeten the men” they deal with right around home (as *you* do) it might come into more general use. But then, you know they have tons and tons of it. Friend Wilkin has had to build a cistern to hold it all—at least the papers say so; but he says it is not so.—A. I. R.]

AN INGENIOUS HIVER.

Bee-keeping in California Not a Bonanza.

BY CYRUS C. ALDRICH.

Editor Gleanings:—Owing to the dry year here in California I shall not have an opportunity to test a self-hiver that I have devised; for that reason I send the inclosed sketch of the self-hiver, so that, if you think best, you can give it to the readers of GLEANINGS to test this season.



The following is a description, and the manner of operation. Like letters refer to like parts.

A A are the hives, spaced a certain distance apart by the board B. In the center of the board B is an upright standard, C. D is a wooden tube 3 inches square, having one side closed by perforated zinc or wire cloth. E E

are made to fit to the fronts of the hives, A being made of wood, with queen-excluding zinc in front, and a slide (not shown) in the rear. The slides are connected by a wire, so that, when one is open, the other is closed.

The manner of operating is as follows: No. 1 A is a hive expecting to swarm. As a swarm issues, the queen is prevented going with the swarm by the excluder E; and as it is her disposition to go up when confined, she follows up the tube to the other excluder. Upon the swarm returning, the queen will be found; and it will cluster on excluder E; and as the tube D is balanced, the weight of the swarm brings the excluder E to the empty hive A, No. 2, the slide being opened by the action of the tube D.

As an argument in favor of specialty in bee-keeping, I wish to give the following illustration.

At Elsinore, Riverside Co., Cal., are thirty bee-keepers who get their mail at that office. Of that thirty, not more than ten take any pains to keep posted in bee-literature, the markets, or the management of their bees.

The twenty who do not advance the interests of bee-keeping fix the market price of those who produce the best and the most of the honey, to the detriment of themselves and the business of bee-keeping.

While I am opposed to giving the reports of large yields of honey that are often given, because of the influence it has in making the latter class more numerous, I wish to give some facts to prove that it pays to do any thing well if done at all.

Mr. John Holman and Chas. Hough, who make a specialty of bee-keeping, have taken over 100 pounds of first-class comb honey to the colony (spring count), and that in apiaries of nearly 200 colonies in one location. Others with equally good locations, who mix up bee-keeping with other pursuits, have not taken half that amount of comb, and, where extracted, not to exceed 100 pounds to the colony; and, owing to the same influences, they have sold their extracted honey for 2 and 3 cents a pound, and their comb for 5 and 6 cents, which does not leave much after paying for packages. With such prices, and the prospect of a dry year here in California, but little if any thing will be left after the bees are fed.

Taking every thing into consideration, bee-keeping in California is not a bonanza unless every advantage is taken in the industry.

[Twenty years ago and more, perhaps, A. I. R. had rigged up in our old yard a device embodying somewhat the same principle. It was a long pole pivoted after the manner of the well-sweeps that were once used for hauling up the “old oaken buckets” from wells. One end of the pole stood up high in the air, and the other end, weighted, came in contact with the ground. To the upper end was attached a twig or limb on which a swarm had previously clustered. It was calculated that, when a swarm came out, it would seek this limb on the aforesaid pole, having the scent of the previous swarm and that of the

queen. As the bees began to cluster, their weight, continually increasing, would overbalance the pole and cause it to dump the cluster into a hive just beneath. A pistol was attached to the rigging, so that, whenever a pole took a "dump," the pistol would go off, and inform the owner, who would close the hive up, take it away, and put another one in its place. The theory was all right, but the practice was bad; at least, I do not remember that it ever worked. Mr. Aldrich's idea, if it works free enough and easy enough, I am sure would deposit the swarm in hive No. 2. But there is just one serious objection to it: It would take a big lot of machinery for hiving swarms in a whole apiary that are expected to come out. As a novelty and as a curiosity it can, however, be tried with one colony.

As to bee-keeping in California, the prices have gone down so very low that I do not suppose the business is as profitable as it once was. Still, there are quite a number of prominent bee-keepers who are, I believe, making a fairly good thing of it.—ED.]

THE ONTARIO COUNTY BEE-KEEPERS' CONVENTION.

History of the Honey-bee; Honey, and its Uses in Early Times; an Interesting Article.

BY F. GREINER.

From an essay on the "History of the Honey-bee," read before the convention, I take the following:

It is now an undisputed fact that bees were in existence long before man. Petrified (or fossil) bees, *Apis adamitica*, have been found in numerous instances, here in a stone-quarry, there in the amber deposits, showing that bees are not a late production of nature. We have also evidence that, in prehistoric times, among a people that must have been in existence then (judging from the remains of their work, tools, etc., found, honey-strainers among other things), bee-keeping was a branch of their industry. What kind of bees these people kept has, however, not been determined. The writers of later ages, and of times long past, have not made quite the distinctions between different races that we do to-day, although Virgil, Aristotle, and others mention bees of a dark and of a light or yellow color. It seems to have been the principal aim of the ancient Germans, and, in fact, of the people in general, inhabiting North Europe, to produce honey for the purpose of converting it into a drink, evidently intoxicating. This tendency may be followed, like a red stripe in a carpet, from remote times. In the German mythology this drink, *met*, is mentioned a thousand times in the poetry of that time, although nothing is said about bees and bee-keeping.

The German bee is common all over the northern part of Europe. It is of a dark brown or nearly black color. This bee is not alike all over the territory named. Evolution has brought about slight changes according to existing environments, and so we find a

number of different strains. First, the common brown bee, the same as we have here, the bee that was imported into America by the immigrants. In the heath sections of Germany we find the heath bee, resembling the first named exactly in outward appearance, but differing from it in their great disposition to swarm. It may truly be called a swarming bee. Vogel claims the heath bee, when brought into different surroundings, will acclimate itself in a few years and lose this swarming tendency.

In the mountains of Carniola we find a gray bee with a possibly slight admixture of yellow blood. It very nearly resembles our common brown bee. This Carniolan bee has been imported into America.

Going southeast we have the Caucasian bee, so named from the mountainous region, Caucasus, where it is found. It is a dark bee, possibly a cross between an eastern and western bee.

The Smyrniar bee of Asia may also be a cross with an oriental race. Greece has a dark bee; also Hungary and Austria, and in North Norway. In fact, many other lands or districts may be named, each having its own peculiar bee.

Genuine black bees may be found in Africa. Mention may be made of the Tunisian bees, or Punics. They are probably of oriental origin.

In examining the bees of the different lands we find the blacks predominating in Norway, Sweden, Denmark, France, Germany, Russia, Austria, Carniola, Switzerland, Tyrol, Greece, Northern Asia, Northern Africa, etc. All have a dark bee. Yellow bees we find only in Syria, Southern Spain, Italy, Cyprus, and other islands in the Mediterranean Sea.

F. Benton thinks that, since some insects have a way to protect themselves by assuming the same color as their surroundings, it is not unreasonable to suppose that bees may have done the same. And, indeed, so it would seem. Cyprus, on account of so much yellow sand, has a very yellow appearance, and her bees are the most yellow of any. The general appearance of Africa is black. She has the darkest bees. Germany, with its mountains and forests, seems dark or brown. Her bees are brown. Carniola, with her gray rocks predominating, has the gray bee.

So much about the different bees; and now for some glimpses of bee-keeping, uses of honey, etc. Bee-keeping in India may be traced back to the year 2000 B. C. It was said there that it would rain honey in the spring of the year in certain localities. To these the shepherds would drive their cows. Having fed on the sweetened grasses their milk would be so sweet as not to need any other sweetening. A baby boy received, for his first food, honey from a golden spoon (it might bother us fellows who have not been to the Klondike, to find the golden spoons).

Egypt was once the land of knowledge and culture (Moses received his education there, as will be remembered, 1500 B. C.). It abounded in honey-producing plants. The date-palm, for one, carried on a single fruit stalk as many as 12,000 nectar-yielding blos-

soms. The information we have from this land regarding bee-keeping in those early days is principally gleaned from the hieroglyphics on pyramids, obelisks, sphinxes, and on remains of temple walls. Honey was used to embalm the dead; wax also for the same purpose, and to make coffins air-tight. Bee-hives were made of cane, and coated with clay. Others made them wholly of clay, and burned them. Such hives are being made, up to this day. The Egyptians practiced migratory bee-keeping at an early date. It is recorded in history that Solon, "the Wise," made a special trip from Greece to Egypt about 600 B. C. for the purpose of learning this art of bee-keeping.

Palestine abounded with bees at the time the Israelites first occupied it. The many cavities in the chalk rocks and trees furnished all the needed shelter for the bees, and the people obtained all their honey and wax by simply robbing the bees. After the advent of Christ, bees were kept in hives and in apiaries. Even a smoker had come into use, in which well-dried droppings from the cattle-yard were burned. A law is recorded forbidding the lighting of the smoker on the sabbath day (it might be well for a few of us to make a note of this).

Apiculture in Arabia seems of later origin, the people having copied from the Greeks and Romans. The first history we find in the Koran. Mohammed devotes a whole chapter in it to bees and bee-keeping. Mohammed's followers believed that honey was the principal food in "the happy land beyond."

Numerous Greek and Roman writers have given us bits of bee-history here and there. Virgil called the bees repeatedly "the children of the dead (rotten) ox." According to tradition bees might be produced at will at any time in this manner: Take a two-year-old steer (the Latin word for steer is *apis*, and so it will be seen that the word *apis* means 'steer as well as bee'); stuff rags or the like into his nose and mouth, no matter how much he may object, and now belabor him with a club till dead, but without breaking his skin. Now let him lie till decomposed. After a time, it was said, bees would come forth from the carcass.

It seems incredible that so absurd a story as the above could have found any believers; but this is unmistakably so; for even Melancthon, the bosom friend of Dr. Martin Luther, living 1497—1560, believed it. Yes, even later writers have recorded it as a fact. However, not all the "smart men" were as ignorant of the natural history of the bee as that. Aristotle, living between 400 and 300 years B. C., does not even mention this steer-story. His knowledge was away beyond that of other mortals of his time—yes, even of our times.

When talking with a man of high education but a year or two ago on the subject of bees the conversation turned to the sources of honey. I mentioned that our bees "made the most of our honey from basswood."

"I had no idea the bees *could* make honey out of any kind of wood," was the educated man's reply, and he meant what he said.

Aristotle was well acquainted with the nature of the bee. He knew the true sex of the queen, the workers, the drone. He knew the queen laid all the eggs, knew the time of development of the different bees; he was wrong, however, in supposing the old bees to be the nurses, the young the field-workers. It is hard to understand that this knowledge that Aristotle possessed in regard to the life of the bee did not spread more, and become the property of the people; but it is a fact that, during the following 2000 years, more was forgotten than added, and this in the face of the fact that a great many bees were kept. There was Julius Caesar, 100—44 B. C. All of his farms were well stocked up with bees. Others followed his example. In the eighth century, Karl the Great, reigning over a vast empire, did a great deal to promote the keeping of bees. After the Roman Catholic church had gained a foothold in Europe, the monks, in their monasteries especially, made a business of keeping bees, and induced the people to do the same. During the eleventh century the church demanded of the people the tenth of all the honey and wax harvested of wild bees, and the third from bees kept in hives. In view of this fact, what bee-keeper of to-day has any reason for complaining of high taxes?

For illuminating purposes at these times, the wax candle was the best thing obtainable, and only the rich could afford it in a limited way. Others had to be satisfied with the light of a burning pitch-pine knot. The churches in particular consumed much wax for candles. Before Luther's time the principal church in Wittenberg used for this purpose in one year 35,000 pounds of wax. This demand for wax, and for an article to sweeten foods and drinks, stimulated the bee-business to a great extent, and the number of colonies of bees increased. It is stated that, during the eleventh and twelfth centuries, whole shiploads of honey and wax were exported from Germany to Palestine via Constantinople. Regular honey-markets were held every year in the cities of Augsburg, Nürnberg, Frankfurt, and Cologne. Large breweries were built, in which quantities of honey-beer were made—enough, it is stated, to subdue large city fires. I take a few items from a honey-market report, said market being held in Nürnberg in 1250.

Comb honey was offered on earthen dishes, strained honey in pails and tubs; chunks of wax were heaped up in large piles. The honey (strained) was sold by the "seidel," and, according to a chronicle of that time, the seidel contained "fourteen mouthfuls and two fingers." Druggists were bantering for wax. Who knows, adds a later reporter, what a mixture of pulverized toad-eyes and beeswax might be good for? The city clerk needs wax for seals, and he is picking out the nicest pieces. Suddenly the business comes to a standstill, as the market-master and his crew are making the round to inspect. Honey harvested before the birthday of the Virgin Mary is not wholesome, and must not be offered for sale. The market-master receives the statement under oath that the honey is of the proper character.

The honey is also examined as to its purity. The loss of one hand was the penalty for adulteration. It seems penalties were of a severe nature. I will name another such case. Any one stealing bees or honey, and caught in the act, was, without trial, delivered to the sheriff to be executed in a most terrible way. His intestines were first wound around the tree from which he took the honey, and then he was hung to the tree.

The hives in use in those times were of a very substantial nature. Let us watch one of the keepers preparing a hive. We see him standing on a ladder about ten or twelve feet above ground, cutting a cavity from three to four feet long in a large basswood-tree. Basswood or pine was preferred, and oak rejected. If a hive was needed for immediate use, the cavity was burned out with a straw fire; if not, it was just left to dry out. It was then rubbed over with wax, an entrance-hole bored in, and a suitable door fitted against the cavity, and fastened. For centuries after this time the most popular hive in use was the hollowed-out log, three feet long, and a door fitted against each end. The honey from these was generally not harvested till the winter was over. The bee-keeper would then go to work and cut out all the comb he could, whether filled with honey or not, just leaving what was occupied with brood. After the forests had been more and more cleared off in Germany, and timber became scarce, straw hives came into use, and many bees are kept in such up to this day. The majority of the modern bee-hives are made of the more porous timbers, like pine, basswood, etc., are double-walled, opening from one or two sides, cupboard fashion, not from the top, thus making it practicable to tier up colony upon colony without inconvenience (just the thing for bee-houses). Tenement hives are much liked. Of late years a few bee-keepers are commencing to construct their hives after the English and American pattern, giving access from the top, and also using pound sections.

The subject of hives and bee-keeping in Germany has been treated more fully than that of other countries, because the writer has been more familiar with it, but has not been given as fully in the above as in the original essay.

Naples, N. Y., March 14.

SOUTH DAKOTA AS A BEE COUNTRY.

Not as Good as Some other States.

BY STEPHEN J. HARMELING.

Dear Friend Root:—Some time ago I wrote a few lines for GLEANINGS, which brought a regular shower of letters inquiring about prospects for bee-keepers in our State. I am too busy to answer these friends; and since none of the letters contained even a stamp, I can get out of it nicely if you will let this go into GLEANINGS.

I would not call Dakota a first-class bee country like Wisconsin or Eastern Iowa, except the region of the Missouri River. The

bottom is just as extensive here in Dakota as in Iowa, and the flora as good. Basswood is found on it everywhere, and acres of coreopsis, heartsease, and cleome (Rocky Mountain bee-plant). There are no apiaries above Yankton, on this river. The "Jim" River, though not so rich in bee-pasturage as the Missouri, is a good average location, I should judge, as far up as Jamestown, in North Dakota.

The level prairie country is not rich in nectar-producing flora, but there seems to be a little coming on continuously until the large goldenrod blooms in August and September, when there is a heavy flow that makes bees swarm. My bees, I think, can be depended on for, say, 50 lbs. surplus on such level prairie to the average colony.

The home market for honey is good. There is no trouble in getting 12 to 15 cents for extracted. The flavor of Dakota honey is superior. That of wild mustard is delicious. Chicago has sent too much "Rose Honey" and "Bumble-bee Honey" into these markets. Chicago is really the meanest hole of a city on the face of the earth. We expect all that comes from Chicago to be adulterated. It is so notorious here, that people who have ever tasted real honey can notice something wrong, and now they suspect every thing that comes from the East, and will pay a good price for the home product, which they know to be pure.

FARMING FOR BEES.

I believe farming for bees would pay anywhere in Dakota. Land is cheap. For instance, catnip will grow here; single plants four feet in diameter, and as high, and bloom continually till frost, and bees working on it all the time. White mustard, too, could be raised, and the seed is salable. We have clear skies and slow-continued flows from many plants that will do well here. There is no better honey to winter bees on than the goldenrod of these prairies. It is ready to seal almost immediately after gathering. Any honey-plants that are indigenous to semi-arid regions will do well here, and many others besides, as mignonette, which makes a great growth, and furnishes honey all summer till cut down by heavy frosts.

WINTERING BEES.

This is not a difficult problem here. My friend Mr. D. Danielson, of Clarkston, S. D., winters right along with hardly any loss, on summer stands, in chaff hives. Last fall he placed five lots of small nuclei in a large hive with partitions, before a window upstairs in a bedroom, with small entrances through the window-sill, and they are breeding up nicely now.

Caves and cyclone-escapes are good. The earth is dry, as a rule, and the cave keeps cool and sweet. Mine stand at 42° now, and has not varied 3° all winter, and it is only a hole in the ground, 7x16, and 7 feet deep, with 3 doors, and a smokestack 6x8 in the further end.

Now, I would caution my friends not to think this the finest bee country in the world. I am probably a little over-enthusiastic; but I

believe there is more money in bees than in cows, if a person will farm a little for them. Those who have asked me whether it would be advisable to move an apiary had better look the matter up carefully for themselves, though I believe a person would not make a mistake by locating on the Missouri anywhere above Yankton.

Marion, So. Dak., Apr. 7.

ABOUT WINTERING BEES.

Is There Any Thing New on This Subject?

BY HENRY ALLEY.

It is so long since I have written any thing upon apiculture for publication in any bee-paper that possibly many of the readers of this article may have forgotten the fact that I ever existed. Now that the spirit moves again, I shall try to give the readers of *GLEANINGS* something new about wintering bees. I have never been in favor of wintering bees on the "hot-bed" plan; that is, I have not believed in keeping bees through the winter in a place where the temperature is continuously maintained at a high point, say from 40 to 50°. That is too much on the "hot-bed" plan for me. I believe in placing bees in winter quarters in the fall as late as possible, or certainly not until winter is about to set in. Here that time is about the middle of December. On the other hand, I want to take them out on the approach of spring, and that with us is about the 20th of March.

My objection to wintering bees in a high temperature is that they can not safely be put on the summer stands in the spring until the temperature averages as high outside as that in which the bees were wintered in, or kept in from four to five months. The change from a warm to a cold place works just the same on bees as it does on tender vegetables grown under glass. Remove the glass, and down go the plants. Place the bees on the summer stand too early, and down go the bees—spring dwindling. I have tested both the vegetable and the bee experiment, and know what I am talking about.

Now, Mr. Editor, I am ready to write what I started to write when I commenced. In the fall of 1896 I arranged, as an experiment only, a small place to winter bees in. The room is about ten feet long, six wide, and five high. There is room for about 30 hives of bees if the winter-cases are removed. The wall on the west side is about 6 inches thick. The other sides are double, the inner wall being only heavy building-paper, while the outside is boarded and shingled. There is a double roof to the building, and a ventilator opening to the south between the two roofs; not much ventilation at the bottom. Floor is the plain earth. The last two years the bees were put in about the middle of December; every colony came out both years in fine condition, though the first year there was no ventilation at the top of the building, and a few combs molded a little. This year the bees were removed on the 9th day of March, and the six days fol-

lowing were warm and summer-like. I judged that there were about two quarts of dead bees in all, and every comb as bright and clean as in the fall. Some of the colonies commenced to carry in pollen inside of 24 hours—a fact attesting the perfect way the bees had wintered.

Now comes the point and the theory I wish to emphasize upon: There was no such thing as an even temperature in the bee house during the two winters. I did not want such a thing to be so. I wanted the temperature to vary inside as it did outside, only not to such extremes. When it was at zero outside I found it at 20 degrees inside, and that was just as I desired it. Nor did the temperature go above 45° through the winter. There will be no spring-dwindling here, and I can show as fine a lot of bees as can be found anywhere in Massachusetts.

If the winter problem had not played out, I should expect some of the "hot-bed" bee-men to pitch into me for expressing sentiments like the above. But facts are facts, and the laugh is on my side, as my theory and experiments have proved a complete success.

Wenham, Mass.

LARGE VS. SMALL ENTRANCES.

The Advantages of Large Entrances; Dr. C. C. Miller's Reply to G. M. Doolittle.

Evidently there's sporting blood in the editor's veins. He is spoiling to see Doolittle and me join battle (see p. 166), a battle out of which he may not come entirely unscathed himself, occupying as he does middle ground, where bullets may strike him from both sides. Doolittle doesn't seem to care for any increase of size of entrance, while I want big opening fore and aft, and also at the sides, while the editor stands in the middle, pleading for enlargement only front and rear.

A good many years ago, as I have told more than once, I stood watching Adam Grimm (it makes me just a bit sad to think some of the younger friends don't know who Adam Grimm was) as he was putting surplus boxes (sections were not yet) on his hives. He tilted up the cover at the rear, leaving quite an opening so the air could pass entirely through the brood-chamber, saying to me with much emphasis, "I consider that very important." For years I did the same thing, shoving forward the super containing wide frames, so as to make an opening of $\frac{1}{4}$ to $\frac{1}{2}$ inch between the two stories at the back. I should have continued it to this day if it had not been that the sections near this opening were too much delayed in being finished. But a notable increase of swarming occurred simultaneously with the closing-up of that ventilating-space, and I have always thought the two things were closely related as cause and effect.

Mr. Doolittle goes back to the time of box hives, and says there was plenty of swarming then, although all hives were raised from the floor-board. But it must be remembered that there might be, and that there generally were, reasons enough for swarming in spite of abundant opening below. And I have some lin-

gering suspicions that colonies were not so wholly given up to swarming in those days as they are in some apiaries to-day. Don't you remember that the goodness or badness of the season was to a considerable extent measured by the amount of swarming? It was a good season if there was much swarming, a bad season if little. If swarming had been as common as now, that distinction could hardly have been made. But every one knows that lack of room is one of the chief causes of swarming. What matter, then, if a hive was raised an inch, and still too little room left? for in many (probably in most) cases, the queen was crowded in spite of the raising. Surplus room in abundance was not given then as now. Even after surplus room began to be given above, it was limited, and only a small passage from the brood-chamber allowed, that passage perhaps not being opened till swarming had been decided upon by the bees.

Mr. Doolittle would just as soon have the bees cluster on the outside of the hive as to have the same cluster hanging idly under the bottom-bars in a space made by blocking up the hive. How about it, though, Bro. Doolittle, if the cluster hanging on the outside of the hive is two or three times as large as could hang under the bottom-bars when the hive is raised? Did you never see a thing of that kind? I think I've seen clusters hanging on the outside three or four times as large as could hang under bottom-bars an inch above the floor.

Suppose, however, that the amount of bees is the same in each case. Take two colonies alike in every respect, in hives exactly alike, eight-framers, for instance. When weather gets hot one of them is raised, so there's an opening an inch high all around. The other is left with an entrance $12 \times \frac{3}{8}$ —a little more than three quarts extra room under the raised hive. Now, when it gets hot enough for three quarts of bees to hang outside the hive with the small entrance I don't believe there will be any three quarts under the bottom-bars in the other hive—not hot enough in there.

But suppose the cluster the same in each case, just as many bees under the bottom-bars of one hive as outside in the other, and that the bees extend clear across from bottom-bar to floor. Do you pretend to tell me that it will be just as cool in one hive as in the other? Now look here, Doolittle, I'd stand a good deal from you, but I must draw the line somewhere, and I just *won't* stand that.

In the one case there's an opening $12 \times \frac{3}{8}$. You surely will not say the bees could keep as cool if you should shut up half of that, leaving it $6 \times \frac{3}{8}$. And, by the same token, there ought to be more chance for cooling off if you make another entrance at the back end or at either of the sides of the same size, $12 \times \frac{3}{8}$; for the fanners at the new entrance could carry on business at their own stand, independently of what was done before. And so, as fast as you give greater room you give chance for more ventilation. Let's compare. In the one case the $12 \times \frac{3}{8}$ entrance forms an opening of $4\frac{1}{2}$ square inches. The hive blocked up an inch has an opening of perhaps

60 square inches, about 13 times as much as the other. Now, I don't say the bees will have 13 times the chance to keep cool they do in the other case, but I do say the chance will be more—a good deal more—a great deal more.

Now, Mr. Editor, if I have understood you correctly you want to keep the sides closed, having an entrance at back and front. That back and front gives you an opening of 24 square inches. Don't you think it will be an improvement to more than double that 24 inches, making it 60, by opening up the sides? Say, Ernest, get down off the fence and stand with me before Doolittle has time to get back at me and show that my arguments are all sophistries.

When it comes to actual practice, I confess it isn't pleasant to have a hive tumbling down off its blocks now and then, neither is it a nice thing to give the bees so fine a chance for attack upon your ankles by having the sides open. But it's very much the lesser of two evils. You can protect your ankles, and I've thought the chance for tumbling down would be greatly lessened if the blocks had nails driven clear through them so the points would stick through, say $\frac{1}{4}$ inch, one point running into the hive, the other into the bottom-board. Suppose the floor has a pitch of $\frac{3}{4}$ inch. Then put $\frac{1}{2}$ -inch blocks at the back end, and $1\frac{1}{4}$ -inch blocks at front end. That leaves your hive a dead level while your sections are on, but the floor slants all the time.

Marengo, Ill., March 7.

[I have been rather holding back this locking of horns on the part of Doolittle and Miller until such time as we could clear the arena, and here goes the second round.

Joking aside, so far it seems to me that Dr. Miller has the best of the argument. With the ordinary entrance, our bees around Medina, if the colony is strong enough to work in supers, will very often cluster out in front by the peck measureful; and sometimes they will hang over the entrance so thickly that it is impossible to see where the entrance is. This, of course, makes the hive a veritable oven inside, and no wonder about all the bees are out in front as I have found them to be many and many a time when I have opened up the hive to see what the matter was. All this led me to believe that our entrances were too small, and that they ought to be larger. A large entrance can be contracted; but a small one can not be enlarged except by the awkward plan of setting the hive up on four blocks; and if the bottom is fast, why, then we are "up the stump." And now Dr. Miller wants to know if I do not think that 60 inches square of space all around the hive is better than 24 square inches open front and rear. I do not know that I know what I know on this point. Before we adopted the inch-deep entrance we felt that we had struck the medium between the very narrow entrance, $\frac{3}{8}$, and the widest; but you need not tell anybody, doctor; but I believe I will raise some of our strong colonies up on four blocks, even if they do have an inch-deep entrance to start on. What care I if they do topple over a lit-

tle, or if the bees do sting my ankles? I would willingly, any time, take a few stings, if I thought I could save swarming thereby, and at the same time increase the honey crop.—ED.]

THE B. TAYLOR COMB-LEVELER.

The Purpose of Leveling Down Combs; an Historical Resume of the whole Subject.

BY C. THEILMANN.

Dr. Miller, in *GLEANINGS* for May 1, p. 343, questions the depth to which cells of drawn combs should be leveled down, and says B. Taylor has been quoted as using his excellent Handy leveler for the sake of reducing the depth of the cells. I don't believe he ever used it for that purpose on a perfectly clean section, and have asked for proof. No one has ever brought forward the proof.

The editor also says, on page 344, "I have spent a little time in looking up the late B. Taylor's articles, but I do not anywhere find that he gave a distinct reason *why* he leveled his combs." For some light on this question I will give a little history in the matter, which will clearly show why B. Taylor invented his leveler.

Some years ago the Minnesota Bee-keepers' Association convened at Minneapolis. In one of the sessions the topic of drawn combs to be used for next season came up, and was briskly discussed between myself and B. Taylor. He was against using such combs, and I held them very valuable, and a means of dollars and cents, without any harm or injury to any one, as I had many years' experience with drawn combs before this, and had learned how to manage them so no one could tell the difference between the new and old combs after they were filled. To prove my claim I took some of my dressed and cleaned-out section combs to the next year's convention held at Minneapolis, also to convince Mr. Taylor. When he took one in his hand and held it up to the convention he exclaimed, "It is no wonder that Mr. Theilmann can produce nice honey in drawn combs in the way they are dressed and preserved." I then explained to those present how the drawn combs should be managed after taking from the hives; and after another year Mr. Taylor came to our convention with his comb-leveler and showed it to those present, and had thoroughly repented of the non-use of drawn combs.

Now, the above does not give proof for what purpose the leveler was invented by Mr. Taylor, directly; but my explanation *how* the combs must be dressed leaves no doubt that the leveler was invented for the purpose of melting off the big rim around the cells, which is generally soiled more or less; and, if not taken away, the bees will use part of it for capping the honey, which gives it a yellow tint. This is the whole secret of getting just as nice-looking honey from drawn as from combs built of foundation; no matter how long or short the cells are leveled or shaved off as long as the rims are taken off; and to

do that correctly and perfectly I can do it far better with the honey-knife than with the leveler, for I can shave off the rims where the leveler can not reach them without taking too much of the comb, which the bees have to build again unnecessarily.

I shave the combs before extracting, and after that they are put into supers and given the bees for 24 hours to be cleaned, and then stored away for next season's use. I don't believe in bait sections, but use full supers of drawn combs, and thereby get nicer honey. I would think it a big loss in not using drawn combs.

I would say here, that the sooner the supers are taken from the hives after the honey-flow is over, the better and nicer the unfinished sections will work for shaving them, as the comb then is nice and soft, and the knife cuts smoothly, while later on the comb is brittle and hard.

Theilmanton, Minn., May 9.

[We are glad to get this bit of history regarding comb-levelers; but say, friend T., I do not quite get it through my head how you can do a satisfactory job of leveling down combs built out in sections, with an ordinary honey-knife. What I do not understand is how you get that great big awkward blade down into the box so as to make a neat level job.]

I think we can assume that the whole purpose of leveling, as was once advocated by the late B. Taylor, was to get rid of the thickened soiled edges of the cells as they are ordinarily left by the bees.—ED.]

PEPPER-TREES; RESERVOIRS FOR HONEY, ETC.

R. Wilkin Straightens us Up a Little.

Mr. Root:—You have a most beautiful picture, on page 347, of the bloom and foliage of the pepper-tree, as described by J. H. Martin; but, what a blunder to write under it, "Blossoms from the eucalyptus (or pepper) tree," as if they were the same tree! It is like describing the picture of the white oak (or peach) tree. And then A. I. R. has to back it up in his footnote as a real picture of the eucalyptus, while the eucalyptus is noted for its exceeding stature. An old pepper-tree is usually twice as wide as it is high; otherwise the descriptions are good.

In a late issue of *GLEANINGS* you name my concrete storehouse as a "reservoir for honey," and the article so naming it is going the rounds of the papers. It may be called a reservoir, but it is simply a room 15x26, 9 feet high, made of grout, or concrete, of lime, sand, gravel, and stone, with an iron roof and hydraulic-cement floor, containing a window in each end and a door in the side. A cistern or even a tank above ground can doubtless be made of hydraulic cement that will hold honey. I have a fish-pond mainly above ground that holds water to perfection. Such a cistern would certainly be everlasting, but not portable. By the way, why do we not have more concrete buildings? The cost of

material is small; the walls, 10 inches thick, of my storehouse, had only 8 barrels of lime; the rest of the material I had for the picking up. In many places, especially in California, a cellar could be dug and the walls made of the material dug out. Common inexpensive labor does the work. Some lumber is needed to hold the boxing for mortar, and to support the roof. My house cost me about \$50 for material and \$50 for work, at \$1.50 per day. I have a good two-story eight-room dwelling-house of the same material. I do not know why our California bee-keepers are not using their unoccupied time in making themselves good fire-proof houses. My own, J. F. McIntyre's, and L. E. Mercer's are all I know of in this region. Fowler & Wells, of New York, forty-five years ago published a 50-cent book called "Home for All," that gives details of such buildings, besides giving many valuable hints on economy in building.

Newhall, Cal., May 12.

[Friend Wilkin, I humbly beg pardon, and own up. Ernest brought me the article and the picture, and in reading it hurriedly I got it into my head that friend Martin meant in his closing paragraph to say that eucalyptus and the pepper-tree are one and the same thing; and as I remembered both trees quite well, I concluded they must be only different names for the same thing, like basswood and linden; and I remembered, also, that eucalyptus has two distinct kinds of leaves. I am sure you will not say I am wrong in this respect. I supposed the beautiful picture showed only one form of the leaves and flowers. I think I shall have to visit California a little oftener, and then I shall not get quite so far off when I am trying to "teach" people.

In regard to the reservoir business, Ernest will have to shoulder that part of it. I have always admired such buildings as you have described, and I suppose the principal reason why they are not used more here in the East is because lumber is cheap, and a wooden building can be so quickly put up and made ready for occupancy. I remember the little book you mention; and if it is still in print I should be glad to see a copy. Thanks for calling our attention to the matter.—A. I. R.]

RAISING HIVES OFF FROM THE BOTTOM-BOARD.

Robbing; Business Lies; Hauling Bees, and What to Do when the Bees Escape from the Hives; the Philosophy of the Hot-water Treatment.

BY E. S. ARWINE.

Editor Gleanings:—I must beg leave to differ with you and Dr. Miller as to raising a hive after a sudden stoppage of the honey-flow, etc. From my experience (and I have handled bees for more than a third of a century) you have overlooked the cause impelling bees to rob. I should not hesitate (if the circumstances demanded it) to raise a hive an inch or two, even when there was not a mite

of honey coming in, provided it was done as follows:

Lift the hive gently, slowly, and straight upward, so as not to excite the bees nor cause any unsealed honey to leak from the cells. If the hive be sealed down tightly it should be broken loose from the bottom-board 24 hours before being raised (that is, when no honey is coming in). It is the odor of broken honey, pollen, or propolis, or the odor of excited bees, especially if filling themselves with honey, that attracts the wily robber. Neither should I fear to move a hive provided I did not move it far enough to bewilder the returning bees, and thereby cause them to try to enter the wrong hive and so excite fighting, which in turn might lead to robbing by creating an unusual odor, which would start the bees to searching for the source of the fragrance; and if a colony were much disturbed, and a robber or two once gained admittance, and escaped with his load, then indeed would you have fun, but not the kind to provoke laughter.

If honey is not coming in freely when you read this, please go out to the apiary and prove my statement to be either right or wrong, and henceforth do not take a "think-so" when you can so easily obtain a "know-so."

It is not often I find cause to differ with friend Doolittle; but I must do so in regard to the facing problem. God bless Bro. Doolittle. He is laboring under a mistaken charity. But we should "shun the very appearance of evil," or acts which others can so easily construe as evil intentions.

From the tone of GLEANINGS I am confident The A. I. Root Co. and many of your correspondents do not realize the readiness with which a large proportion of business men will tell uncalled-for lies. If you desire to obtain a definite knowledge of this, you just go into stores where you are unknown, and price various articles; and when you come to an article which is sold for a large profit, just remark, "That is pretty high; can't you sell it a little cheaper?" and note just how many will lie about the cost of the article. Of course, you must price an article of which you know the wholesale price. You may even find some professing Christians who will tell falsehoods, and, if caught, will justify themselves by saying everybody else does it, or it is business, or a trick of the trade. Try this, and let us know through GLEANINGS what your experience is. Verily, "evil men and seducers shall wax worse and worse."

In regard to hauling bees, unless you upset a hive or jostle slowly over a rough road, there is very little danger of stinging unless the bees have a large place of exit—that is, where several can get out at once. After you have hauled them two or three miles they cease to be angry; and if then they should find a place where only one bee can get out at a time, and you have no cover on your wagon, the bee will circle around the hive, and may remain some little time with the wagon; but eventually it flies away and is lost; but if your wagon is covered so the hives are in a darkish place the escaping bees will nearly all cluster on the hive, and remain for quite a

while. I have hauled bees with a pint or more on the outside of the hive, and I have never had any stinging after getting started a little way unless I stopped and disturbed the bees. Therefore, if you are hauling bees, and many of them begin to escape, keep your team going at a lively gait, even in a trot, unless the road is very rough. In that case, stop, unhitch, and drive your team away very quickly; but I have never had to do this.

Your hot-water treatment is all right, I suppose. I never have tried it on bee-stings, although I once had a great many stings in my head and face—I should judge more than a hundred at one time. Let me correct your therapeutics a little. Although hot water acts momentarily as a stimulant, its curative effects are not those of stimulation. It combines in itself the action of a sedative, astringent, and anodyne—that is, it contracts the capillary vessels, blunts the sensibility of the nerve, and reduces the excessive activity of the parts to which it is applied. Hot-water fomentations are indicated as remedies in local congestions and inflammations, and when desirable to induce suppuration; but poultices are better in the latter case. Congestion and inflammation are the result of some cause which induces excessive stimulation in the parts attacked, and a therapeutical agent is indicated which will act generally or locally (as the case may require) as a sedative and anodyne. Stimulants are indicated only where the action of the system or an organ is too feeble to perform its normal functions, and then only to tide over the crisis. Sometimes stimulation acts beneficially when applied locally to a part at some distance from the seat of disease, in which case a revulsive effect is sought.

Both farm and honey crops are a failure here. Dove, Cal., May 11.

[I do not know that I know, friend A., to what you are referring in your first paragraph. You say you differ with Dr. Miller and me about raising a hive after a sudden stoppage of the honey-flow. I assume that you mean *off* from the bottom-board; but as I read over the next paragraph or two I am more mystified, because I agree with about all you say. I do not quite like your fling, where you give us the advice not to take a "think-so" but a "know-so." I like it less because I don't know what you are talking about.

With regard to hauling bees, your experience is quite in line with my own. If a single bee escapes before the bees have been hauled any distance, it is liable to make trouble. But several times on the road I have had the bees get out all over the hives. But they were so disconcerted by the jolting that the fight seemed to have been all taken out of them, and their sole desire seemed to be to keep close to their own entrance. The condition is somewhat the same in the case of taking a bee-tree. The moment it is chopped down, the bees are ready to attack every thing in sight; but after the log has been hammered by repeated blows of the ax to open up the cavity they are so disconcerted that they are as peaceable as flies. Continuous jarring will make a colony reasonably peaceable.

I am glad my hot-water treatment is all right, even if my therapeutics is not.—ED.]

SWEET CLOVER.

BY PROF. A. J. COOK

Dear Ernest:—I gave, as the result of my own experience, the opinion that sweet clover, while a very excellent honey-plant, was of little worth for hay or pasturage. I am glad if it is found valuable for stock, and rejoice that so many find it eaten with a relish by horses and cattle. That it has great value for green manuring, and, like all leguminous plants, will draw largely from the atmospheric nitrogen, and combine this in available form to supply the most expensive of our fertilizer elements, there can be no question. There is no quicker method to restore lost fertility than to plow under a rich vigorous clover crop, and surely melilot is just that. The yellow species of sweet clover grow abundantly about here. It is vigorous, and is an annual. I do not think it attracts the bees so greatly as does the white, and I notice that it is not eaten readily by stock—at least by some stock. I am very glad that so many report *Melilotus alba*, or the white sweet clover, as furnishing appetizing food for cattle and horses.

In last GLEANINGS you speak of our beautiful graceful pepper as though it and the eucalyptus were one. They are very different. The pepper is diffuse, or spreading the foliage—delicate; and the whole habit of the tree is wonderfully graceful. The eucalyptus is tall, the foliage coarser, the leaves simple, and the blossoms much larger. The pepper is from South America, the eucalyptus from Australia. I have some eucalyptus honey, which I think is pretty nearly unmixed. It is very nice, and has no flavor that would suggest its origin; in fact, the flavor is exceedingly pleasant. I think it is rare that any peculiarity of sap is met in the nectar or honey. Pepper is said to be an exception; yet I am doubtful whether this is true. I should like to see or taste of pepper honey that showed the peppery taste. I can believe that this might come in the pollen which was conveyed in the honey, as the bloom seems as peculiar in its pungent qualities as is the foliage.

The eucalyptus is peculiar in its rapid growth, great number of species—nearly 200—and its ability to resist severe drought. The numerous species bloom at various seasons, so that, in a large park of varied species, the bloom may be found in every month of the year. Some of the flowers are of a rich red color, and very showy, while all are beautiful and attractive. In December and January the red gums may be seen swarming with bees as the large white blossoms are flung out to the breeze and to the bees.

Claremont, Cal.

[As to the eucalyptus, see answer to Mr. R. Wilkin, in this issue. I am glad to know that you do not hold to your former opinion. I was sure you would change your views upon the presentation of reasonably good evidence.—ED.]

RAMBLE NO. 146.

The Lot of a Tenderfoot; Prospects for the Coming Season very Poor.

BY RAMBLER.

To Southern California there has been given a light rainfall this year; and short crops, empty pocketbooks, and a light grub-stake will be the rule with a large class of people who live upon dry ranches. The entire grain crop on such ranches will be a failure; our sugar-beet industry will be crippled to the extent of several hundred thousand dollars; even the irrigated districts will not escape some shortage in crops, for the rainfall has not been sufficient to fill the mountain springs and reservoirs. The bee-keeper south of the Tehachapi range of mountains will feel this condition of things as keenly as any class.

There are not a few who make the honey business their chief or only source of income. Here in this cosy nook in the foot-hills is a little cabin, a little wife and a little child or two. The man at the head of it has pardonable pride if he desires to make an earthly paradise for himself and loved ones; the roughness of the little cabin is hidden under the drooping branches of a peppertree, and the climbing rose and sweet-scented flowers surround the home. Five or ten acres are set to fruit-trees; and, though he came to California with a few hundred dollars, he has spent it all, and, ten chances to one, he is quite a little in debt. Not much revenue will be derived from the fruit-trees for at least five years, and something must be done to tide the little family over until the place becomes a paying investment. Our rancher had some knowledge of bees when he lived away back east, and now far back in the canyon he starts an apiary.

With a succession of fair honey-yields there is no business that can be taken up and increased with such light expense, and so quickly, as bee-keeping; and even when the honey is sold at a low price the apiary becomes the main support of the family. Under such circumstances it is easy to imagine how a total failure of the honey crop will bring anxiety into the little family circle.

There is another class of bee-keepers, mostly unmarried men, otherwise known as bachelors, who own no fruit-ranch, no land, no rib, no kid; they live on canned goods and flapjacks for half the year, and "blow in" a good share of their earnings during the next six months. I now have in mind one of this class who

received a good amount of cash for his honey crop, came to town, flashed out in fine clothes, dined and wined expensively, cultivated musical tastes on the piano, and also trained his light fantastic toe in a dancing-school. With expenses in other light accomplishments it is needless to say that, after a year's total failure of the honey crop, he is glad to get back to his cabin and his bees with the little he has left.

The Rambler does not belong to either of the above classes. He has an apiary but no fruit; he also has the fantastic toe, but it performs its fantasies in climbing mountains, crossing valleys, and descending into rugged canyons; here



B. S. K. BENNETT'S APIARY, IN LOS ANGELES, CAL.

there is no use for a piano, for there is music in the waterfall, in the song of the mocking-bird, in the howl of the coyote; even the gentle evening breeze that lulls you to sleep has its place in nature's symphony.

To sit on rocks, to muse over flood and fell,
To slowly trace the forests' shady scene,
Where things that own not man's dominion dwell,
And mortal foot hath ne'er or rarely been;
To climb the trackless mountain all unseen,
With the wild flock that never needs a fold,

Alone o'er steep and foaming falls to lean,
This is not solitude; 'tis but to hold
Converse with nature's charms, and view her stores
unrolled.

Therefore if there is any apology to offer for rambling again it must be attributed to a dry season and a desire to find pastures even in California, where the nectar of flowers invites the bee to gather it, and where the bee-keeper can have the pleasure of subgathering.

Before setting out upon this ramble, for which I have purchased a thousand-mile right of way, I wish to write a few words about Los Angeles, and ramble with a few of the bee-keepers in its vicinity.

Ciudad de la Reina de Los Angeles, as the Spanish have it, and the City of the Queen of the Angels, as the Americans have it, or, for short, Los Angeles; the Americans have not time to utter long names; and this name, like many others in this State, has been materially shortened.

This city was founded under the rule of the Spanish padres about one hundred years ago, and had a sort of lethargic existence with a population of a few hundred Spaniards, Mexicans, and Indians, all living in adobe houses. From all accounts it was a very sleepy town; but one morning in 1847 it was shaken out of its ease and dreams by our Col. Fremont and his rangers; and since that event it has never relapsed into its former condition; and now the City of the Angels is the most wide-awake community on the continent. Up to 1888 the population had increased to about 50,000; but in the last ten years the city has made an unprecedented leap ahead, and now numbers a little over 100,000; and from the energy with which the hammer, the saw, and the trowel are being wielded, there will be another doubling in the next ten years.

The mild climate has attracted many wealthy people, and their cash and taste have created here most beautiful homes. The climate adds its influence to the adornment; for where roses climb and bloom all the year, and a majority of the trees are evergreen, there is no stretch of the imagination for us to say that we are favored with perpetual summer. While wealth in a private way adds to the beauty of the city, means are not stinted when called upon for any public enterprise. In the winter of 1897, when the worthy poor were unable to secure work, and the gaunt figure of want sat at their doors, over \$20,000 was raised by private subscription, and these people were set to work in the public parks, and the benevolent enterprise will redound to the credit and beauty of the city and to the donors for ever.

For adornment the eucalyptus and the pepper tree are largely planted. If massed in one tract the result would be something of a forest. When these trees are in bloom, which is several times during the year, the bees work upon them industriously. The honey-bee,

however, is an ostracized individual in this city; the city fathers have passed an ordinance prohibiting the keeping of bees within the city limits; but in spite of ordinances the bees of their own accord have taken possession of many vacant spaces in residences, and there may be a hundred or more such colonies within the city limits. In some instances unused chimneys are occupied by bees. In one such instance the bees became so prosperous that they filled the chimney and gnawed through the paper that covered the stovepipe hole, and commenced operations in the good people's spare room. The mistress of the house had an idea they would fill the house with honey if they were let alone; but when they withdrew she thought the bees had given up the job in despair (they had evidently swarmed).

There are some thirty bee-keepers in the city; but their apiaries are located all the way from ten to a hundred miles from their homes; a few small apiaries are located in the suburbs of the city, and one almost in the business center where the acreage is limited. As will be seen by the photo, the apiary is used in queen-rearing, and the bees are of a peaceable strain, as the presence of the child will show. Not wishing to have the police get after the owner I forbear to give the name and the location.



THE MEDDLESOME POLICEMAN.

The city ordinance has never been applied to force bees from the city, for the bee-keepers comply with the ordinance except in a few instances like the foregoing. The only attack that has come to my notice was by a brave policeman who, wishing to make the bees comply with city regulations, kicked the hive over, to the delection of the small boys who were quite numerous in the vicinity. There was a counter-attack that made the policeman think there was something hot in the vicinity, and it was several days before he could see clearly to walk his beat.

The City of the Angels is a center of distri-



UNION HIVE AND BOX CO.'S PLANT AT LOS ANGELES, CAL.

bution for all Southern California; and the pioneer firm for handling bee-keepers' supplies to any extent was G. G. Wickson & Co., who were the first to handle the A. I. Root supplies. The pioneer local manufacturers of supplies exclusively is the Bennett Bee-hive Co., who also publish the *Pacific Bee Journal*.

The Union Hive and Box Co. have a large trade in various kinds of boxes, and are also successfully manufacturing hives. Their motto is "Good work or no pay." This year they handle the A. I. Root supplies, and are the only firm that has a stock of eastern supplies on hand. I present a photo of their factory. Our coast manufactories are not very extensive, but there is plenty of time and a chance for them to grow; and it is a good plan to have several manufactories, for then competition comes in and the bee-keeper gets his supplies at a cheaper rate.

Latest dispatch.—I think the police will not get after that city bee-keeper if I give his name. It is Mr. Bennett, the manufacturer of supplies, and the editor of the *Pacific Bee Journal*. Mr. Bennett is a member of the National Guards, and at the present writing there is a prospect that he may be called to the patriotic duty of guarding the Philippine Islands. All honor to the brave boys in blue!

TANGLED.

A Correspondent who would Like to be Unraveled.

BY J. J. M'COY.

I have been a constant reader of GLEANINGS for many years, and I have carefully followed such advice as is given by those I considered most competent to advise. Up to the present time, Doolittle, Hutchinson, Dr. Miller, and a host of others of more or less note, have all been given due consideration. But now I am completely tangled, all mixed through, and what will be the outcome is more than I can tell. I can't see any shadow of coming events, or, at least, if I do they are mixed with a general conglomeration of rubbish, broken separators, old-style sections, thick top-bars, hives with entrances sufficient for rats to creep through, and a great many other things, while in the background float the spirits of Huber, Langstroth, and Quinby, smiling. Why, I can't tell; and the more I study about matters the greater the confusion. For relief I turn to my favorite authorities, and find but little to comfort me. Have they all gone daft? Is all this true that they teach? Do Dr. Miller, W. B. Ranson, and their followers, know that "T supers" are better than all other surplus arrangements? Does The A. I. Root Co. know that the section-holder is superior to all other "fixin's" for surplus apartments? Does Doolittle know that his single-tier wide frame is superior to all other methods for securing his XXX facers? Don't they think so at least? and don't they think so awful strong? Of course, they do; and I, just like them, think that Ranson, Doolittle,

Miller, and all the A. I. Root tribe and all their followers couldn't run after me fast enough to induce me to use any of them as a gift in preference to my present arrangement. But this is only a small matter as compared with the "New Idea" fences (not picket, but plank), plain no-bee-way-non-peep-hole earless sections (how does that name strike you?).

I guess Dr. Miller will roll *his* sleeves up now, and, with Doolittle, make a raid on me. Well, let 'em come. I have a friend who can hold Doolittle level, and I'll keep the flies from tickling the doctor's nose a little while (if I can); and as for the rest of my opposers I guess they won't bother till they get their new "post and rail" fence completed, seeing that spring work is here with the "Ides of March," and so many things to do. I guess they won't bother for awhile, at least.

Say, Doolittle, I wouldn't tell people that it is honest to fill the center of cases with buckwheat honey and XXX facers next the glass, for fear they might not read the rest of the conditions, but just take it for granted to be "*a la* Doolittle," and go and do it, to their sorrow, and then something will get you, sure. And now comes the editor, and says the front of the case will be apt to have the *best* honey out for display, and not for the purpose of deception. Now, who said buckwheat honey wasn't good? Something will get you too. Better "look a little out;" may be you'd better take that back, and "say 'em to-night," and then "say 'em to-morrow night," and "say 'em all the time."

But I have wandered away from the starting-point. Will some one tell me where I am? Oh, yes! what is one to do about reversible bottom-boards when all the hive-bottoms are "spiked" fast? Must he "kick" them off as Cogshall does his supers, and then feel for the bottom corner of his breeches pockets? Then the perfectly level hive, the tipped-to-front hive, the large-front and rear-entrance hive, the deep or shallow hive, the ten-frame, the eight-frame, the single-walled, the double-wall, the Bristol, the Danzy, the Heddon, etc. ! Then the separators, wedges, springs, thumbscrews, slats, honey-board, drone-traps, queen-cages, cell-protectors, and what not—oh, dear me! I am completely "bomfoozled." I wish some kind friend would unwind me. But, say; do it gently; don't twist my neck, please. I was born that way; don't kick me "*a la* Cogshall." I might attempt to kick back. Don't take me to the chopping-block as Rambler's man did "Susan B." I haven't "usurped prerogatives," but let me down "aisy loike." I feel better now, for I just "thot" of my last season's crop of honey, 6000 pounds from 60 colonies of bees, spring count. "How's that for high?" Do any of you want to know how I did it?

Mt. Erie, Ill.

[Yes, and while you are about it "sail into us some more," and don't forget to give some of the other chaps a jab. Misery loves company, you know.—ED.]



FORMING NUCLEI.

Question.—In making nuclei I have always been troubled by so many bees going back to the parent hive that the prospective nuclei were nearly worthless. Then I wish to introduce virgin queens to the nuclei formed, and in this I am not very successful. A friend tells me that you have a plan for making nuclei and introducing virgin queens at the same time, which you gave in the bee-papers some time ago. Will you please tell the younger readers of GLEANINGS about it, and how it works with you after years of trial?

Answer.—As it has been some years since I have said any thing regarding the matter of forming nuclei, it may be excusable with the older members of the fraternity if I say a few words on this subject for those who have been added to the ranks of apiculture in recent years, especially as the plan has always proved successful.

The first requisite to the plan I use is a box made as follows: Get out two pieces of lumber, eight inches long by seven wide by $\frac{3}{4}$ or $\frac{7}{8}$ thick; also two pieces 14 inches long by 7 wide by $\frac{1}{4}$ thick. The latter are nailed to the former so as to form a box about 12 by 7, inside measure, without sides. For sides I use two pieces of wire cloth, cut 14 inches long by $8\frac{1}{2}$ wide. One of these is nailed on permanently, while the other is left so as to be easily removable, by nailing the wire cloth to a little frame like a slate-frame, which frame is lightly tacked to the box, or hinged, according to the wishes of the operator. In the top of the box is bored a large hole, into which a funnel is to be inserted. This funnel is to be large enough to allow one of the brood-frames from your hive being shaken inside of it, and the hole in the small end should be $2\frac{1}{2}$ to 3 inches, so that the bees will readily roll or pass down through it and not clog. This funnel is very similar to those used five or ten years ago in putting up bees, when so many were sold by the pound. The hole in the box should also have something to close it, like a large button, made from your $\frac{1}{4}$ -inch stuff, or a tin slide.

Having funnel and box ready, go to any hive that can spare from it from a pint to two quarts of bees, according to the size of the nuclei desired; take out a frame or frames having bees on the combs, and place on the outside of the hive. If at a time of honey-dearth, so that robber bees may be troublesome, hang the frame in an empty hive, and throw some old bag or blanket over, thus running no risk of creating a row in the apiary, or having your nuclei robbed out after made. Give the frames several sharp knocks with your thumb-nail or a little stick, to cause the bees to fill themselves with honey, and, when so filled, shake as many bees down through the funnel into the box as you wish in your nucleus.

Take out the funnel and close the hole, when you will put the frames from which you shook the bees back into the hives, and close them.

In all such operations especial care must be used not to take the old queen with the bees thus taken; for if you do the colony will be greatly injured, and the virgin queen you attempt to introduce will be destroyed. To be sure you do not get the queen, it is always well to see her, and then set the frame she is on out of the hive till you have taken all the bees you wish at that time.

Having the bees in the box, take the same to any room or shady place, or to the cellar, and throw a blanket, old coat, or piece of carpet over it, to darken it, where it is to be left for four to six hours. In an hour the bees will begin to realize their queenless condition, and tell of it by breaking the cluster they had formed, and running frantically about the cage; and, as time goes on, this distress will be more manifest till they will fairly beg for something in the shape of a queen; and the longer they are kept without one the more sure you will be of their accepting the one you give them.

When the time has arrived that I think it proper to give the queen, which in no case should be in less than four hours from the time they were shaken into the cage, I go to the queen-nursery and get a virgin queen and give them. To put the queen in, set the box down suddenly, so that all of the bees will fall to the bottom, when the hole is opened in the box and the queen allowed to run in with the bees. The bees will at once set up a most joyful hum, thus telling of their new-found treasure as plainly as if they could talk.

The box is now left as it was before the queen was put in, for from five to twelve hours, just in accord with the time the bees were put in. If put in during the early forenoon, then they are taken out near sunset; if during the afternoon, then not till the next morning. When ready to take from the box, a hive is prepared by placing in it a division-board, a frame containing a little brood, and one having two or three pounds of honey, all of which are put on the opposite side of the hive from where you wish the bees.

Now get the box, in which you will find the bees all compactly clustered like a swarm, and carefully remove the wire-cloth movable side, when, with a quick jerk, the bees can be dislodged from the box to the bottom of the hive. Now quickly draw the comb of honey, brood, and division-board across the rabbets of the hive, in the order named, to where the bees are, and they will be immediately on them. The hive is now closed, the entrance opened on the side farthest from the combs; and if all has been rightly conducted, and works as it should, in a week you will have a nice little colony with a laying queen, from which a full colony can be built up, or queens reared for market.

If you do not wish to make the box and funnel, the bees can be shaken into a tight hive, some wire cloth fastened to the top, the queen run in through a hole in the side, or under one corner of the wire cloth, and the

hive left bottom up after the queen is put in, so that the bees will cluster on the bottom. In hiving, turn the hive right side up, remove the wire cloth, set in the combs and division-board, doing all so quickly that the bees will not have time to crawl up the sides before you get the combs in. Now close the hive at the top and open the entrance, when you have the same thing as before, though the box plan makes one much more independent of the whims of the bees; and where many nuclei are to be formed, it amply pays for all cost in construction.



SCRAPING SECTIONS; SECTION-HOLDERS; A
REPLY TO DR. MILLER

Look here, Dr. Miller, I do not wish to intimate that you are not truthful, but I do believe that in our locality you can not scrape half of 1200 sections per day. You surely can not have the amount of propolis that we have. Did you notice what James Roat says on page 299? He says that they considered 100 sections a good day's work, scraping with the knife. In localities where there is little propolis, a section per minute could be easily cleaned with the machine cleaner. Now, in order to clean 1200 sections per day of 10 hours you will have to scrape two sections per minute. If you look at it in this way you will notice that very little time can be given to each section. You say that you wish I would figure a little when I get through cleaning, if I had as many to scrape as yourself.

I have repeatedly figured the cost of scraping, and I should like to ask you what I shall do about it when I am not able to scrape more than I have stated, and do it right. Shall I let the sections go unscraped because I can not do it as fast as you can?

Again, you throw a straw at me in GLEANINGS for April 15. I am not very smart, doctor, but straws do not fly very swift either. As long as you do not throw clubs I will be contented.

You seem to think that three men would have to be pretty smart to examine 200 colonies before breakfast. Well, let us figure a little. Three men get up in the morning at 4 o'clock, and have breakfast at 7. This would be 9 hours for one man. Nine hours to examine 200 colonies is 2 minutes 42 seconds for each one. Well, I would rather do this than scrape 1200 sections per day. I believe I will tilt that Hill up a little higher. I can not see any reason for laying him low in some hollow.

If 200 colonies are in the condition that they ought to be, it takes very little time to see that all is well. If they had an abundance of stores in the fall they will not need to be examined in regard to this point; and as the brood-nest would not have to be contracted except with a small percentage of the whole,

I think I should have quite an easy nine hours' work; at least this is how I see it in my locality.

SECTION-HOLDERS VS. T SUPERS.

Doctor, you ask me to tell you why you should use the section-holders. Well, I will tell you. It is simply because they are superior; but my feeling toward you in regard to section-holders is like the little boy's in the following story:

Two neighbors were living peaceably side by side. We will designate them by neighbors A and B. Neighbor A had a boy who had some words with neighbor B, and the boy politely told neighbor B to go to the infernal regions. Now, neighbor B told neighbor A what his boy had said. Neighbor A gave his son an option of either going to neighbor B and apologizing or taking a whipping. So, over the boy goes to neighbor B, and, says he, "I told you yesterday that you should go to hades, and I came back to-day to tell you that you need not go unless you want to."

I. S. TILT.

SHEEP AS LAWN-MOWERS AROUND HIVES.

We have 80 colonies of bees in a yard of about 60 square rods. Hearing of others' success with sheep to keep grass down we gave them a trial last season, and with most gratifying results. It may be well to mention the fact that sheep consider grapevines as grass, whether in, over, or just outside the yard. We put two 80-lb. lambs in, and they made a good living till after harvest. This season we will follow a better plan of putting in more sheep, and just when needed. The sheep like especially the grass at the entrance. At times the bees will make them move on, but I have not seen any become tangled in their wool, nor enraged at them, as they are at other animals, which I can not account for. Last season I chased a groundhog through the beeyard. It stopped one moment between two populous colonies standing one foot apart. There was a rush of angry bees, and, after my killing Mr. Groundhog, several rods from this place I found him still well sprinkled with buzzing, angry bees.

F. S. COMSTOCK.

North Manchester, Ind., May 16.

HONEY FOR COOKING; DUCKS AND BEES.

Mr. Root:—I saw your request for those who have used honey for cooking, in your excellent paper, where I learn many things. I would say that, for 20 years, since keeping bees, I have used honey a great deal for canning fruit, and especially black raspberries for pies. I think it better than sugar. For apple pies and for cake we use part honey. When pie is eaten warm there is more of a honey taste than when cold. I do not have buckwheat honey. That might not be as good for cooking. Corn bread is nicer sweetened with honey.

Yes, ducks and bees go together good. Quite young ducks will look for the wax-miller till quite dark, and early in the morning. I find them a help to keep these insects from among my bees. They do not mind cool

weather like chickens, and are easily raised with little experience, and do well without much water, if only plenty to drink.

We are much interested in F. Greiner's piece on pollen substitutes, and in every help to sell section honey to responsible buyers.

I hope you will print your way of grading before time for grading this year's crop, so many of us can refer to it, and have it as perfect as possible. CYNTHIA E. TAYNE.

Tuttles, N. Y., May 2.

[The plain section and fence may or may not set up a new standard for grading. We shall see as the season goes on. At present perhaps we had better wait.—ED.]

YOUNG DUCKS NOT KILLED BY BEES.

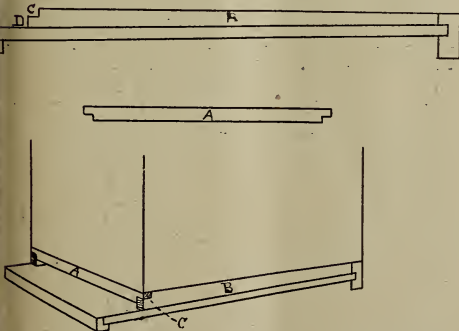
I notice in GLEANINGS of May 1, page 352, J. E. Hand says that his ducks die with their throats full of bee-stings. I can't understand that statement. I have a hundred stands of bees, and I raise ducks by the hundreds year after year. I have seen the young ducks stung by swallowing a bee, but never had one die from the effects of it. They never care to catch a second bee. Last year I lost lots of half-grown ducks with swelled heads and throats, but it was not caused by bee-stings. I think it is a disease caused by the hot sun, and not having proper shade. I should like to know what kind of ducks he has, that catch bees till they die from the effects.

Braceville, Ill., May 16. JOHN BURR.

[This confirms my statement to the effect that there is no trouble in raising ducks and bees together, J. E. Hand notwithstanding. This leads me to believe that friend H. must have awful cross bees.—ED.]

HOWES' BOTTOM-BOARD.

This is a side view of my bottom-board. It is the same as your beveled bottom-board,

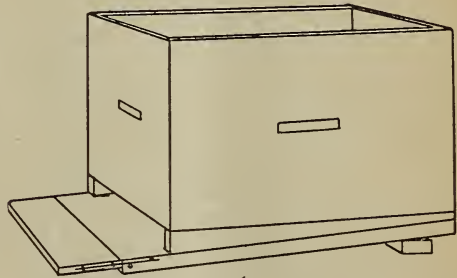


with two exceptions; and those exceptions are what make the board for me. First, the rear cleat is $\frac{1}{2}$ inch deeper below the bottom-board than the front; this gives the board a $\frac{1}{2}$ -inch fall from rear to front, when set on a level (which all hives should be), and does away with rain driving in and remaining to evaporate and make the hive damp; also facilitates the removal of dead bees, etc., by the living. Second, the side strips are scant $\frac{1}{2}$ inch thick-

er at the front end, which allows of the hives being set perfectly level both ways, and gives them $\frac{7}{8}$ -inch entrance, so necessary during the honey-flow. For contracting the entrance I use a $\frac{1}{2}$ -inch square strip like pattern above, which just slips into the notch under the front end of the hive, and contract the entrance to $\frac{3}{4}$ inch. E. W. HOWES.

Chatham, N. Y.

[There is no doubt that this would give freer ventilation; but whether it would be as good as one having a deep space of the same depth clear to the back end of the hive, is a little doubtful. It is true, however, that it allows the hive to be perfectly level while the bottom-board itself may slant sufficiently to shed water.



Here is another idea almost in the same line, sent us by another friend whose letter I have mislaid. The principle is the same save that in the one first shown strip A is used to contract the entrance. If the colonies are as strong as they should be I doubt if the full entrance need be contracted, even after the honey season. In winter or during cold weather it may be necessary, however, to use some sort of contracting-strip.—ED.]

THAT STING-PROOF BEE-SUIT.

GLEANINGS, April 1, page 253, gives a sample of a bee-proof sting-proof suit. This dress is very good, but it is the right thing to take a warm bath in a few seconds. As represented, it is the first one I used when I was a novice. At times I have to replace the upper part of the cloth by a piece of wire cloth sewed all around a straw hat, and shaped in such a way as to outline the shoulders. With such a device, the air coming from all sides makes a great difference in one's comfort.

FRANCOIS BENOIT.

Montreal, Que., Can., May 2.

THE BELT VS. OTHER FORMS OF SECTION-CLEANERS.

Having just read L. A. Aspinwall's article, *Review*, p. 107, I am perfectly astonished when he says on page 109, there is one inherent objection to the belt-cleaner when the fine particles of propolis are thrown into the honey when the edges of the section are cleaned. Now, that is a mistake, and I want you to test that the very first thing. The section is held when cleaning the edges across the belt like this: Hold one edge at a time lengthwise, but a little crosswise, the belt revolving

from you, and I defy any one to discover with a spyglass one particle of propolis or dust on or in the honey; besides, I want you to clean 100 or 500, or get some one to do it, and see if the belt is gummed. It's a mistake, also. Mr. W. or Hutchinson didn't ask Mr. A. how many combs were cracked out of that thousand. There's a screw loose somewhere, and I want you to find it. Why, bless your soul, I've got the wheel yet that cleaned about 1000 sections, and it isn't past doing a pretty good job yet. I don't believe Aspinwall ever tried a belt machine, and his talk is theory.

Reinersville, O.

J. A. GOLDEN.

CONTRACTION NOT A THING OF THE PAST.

Mr. E. R. Root:—On page 358 of GLEANINGS you speak of "the contraction fad." You seem to think that it has passed away. Well, not much. I have been practicing it *a la* Heddon and Hutchinson for the past eight or ten years, and intend to keep right on until I find something better. I use ten-frame portico hives; spread the brood until every frame is full; use the Alley trap, and, when they swarm, contract the brood-nest to five L. frames. I have never had an after-swarm, and none of them have swarmed the second time—i. e., none of them ever get strong enough to swarm again that season; and last, but not least, I get from 25 to 50 per cent more comb honey than I ever did by any other plan. With me "the contraction fad" has come to stay. I also use the T super, and shall continue to use it, and Niver may play the banjo and smash 'em if he wants to. I have 12 T supers filled with plain sections and fences. I like to keep up with the procession, but not by holding on to somebody's coat-tail. I once heard of a man who lived on a farm for forty years before he found out that hogs would eat turnips—probably never would if the hogs had not given him an object-lesson by getting out of the pen into the turnip-patch.

W. E. FLOWER.

Ashbourne, Pa., May 7.

[No doubt, friend F., for your locality and for your method of work contraction is all right; but I verily believe that, in the hands of the inexperienced, it has done more harm than good; and I also believe that many of the experts who formerly used it have gone back on it.

That is right—be independent. Don't hang on to anybody's coat-tail providing you can paddle your own canoe.—ED.]

A SECTION-CLEANING BELT; A GOOD SUGGESTION.

Please allow me to suggest the use of a leather belt filled with fine wire (resembling a brush) for a section-cleaning machine, such as is used in woolen-mills, or the kind the belt-makers use in raising a nap on the lap before applying the cement. I believe that would work if the wire were short and run at a fair speed; and when such a belt goes over the pulley the wire would open up or spread apart, and let all refuse fly from it.

Morris, Ill.

W. E. DAGES.

BERMUDA GRASS, ETC.

I see on page 464 Mr. O. O. Poppleton says Bermuda grass is very hard to destroy. In this country it is easily killed if plowed up broadcast in very dry hot weather or in winter, so the roots can freeze.

It is a splendid pasture grass. Stock and cattle will get almost as fat on it as they will on grain. But plowing it in the spring will only cause it to grow more vigorously.

Chambers, Ala., May 9.

J. M. CUTTS.



J. W. W., Ky.—If you have a lot of spoiled molasses it may help you some to heat it—especially if it is soured. If the bees will take it they will make good use of it for brood-rearing; otherwise there is nothing you could do with it.

E. E. N., Ohio.—I can not tell what ails your bees unless it is that some time or other the brood has been chilled, causing the young bees to develop with defective wings or legs. Where the brood has been chilled enough to kill it, of course it is uncapped, and the bees dump it in front.

R. M., Ind.—I doubt the wisdom of sending you any more queens until you determine whether your hive is queenless or not. This hive may have a queen or a fertile worker; and if so, they will kill every queen you give them. The main thing to do is to give them a frame of brood from some other colony. Sealed brood will not do. It should be unsealed larvæ. If they raise cells then, you may be sure they are queenless. If not, then you can introduce another queen.

L. M. A., N. Y.—I believe it would be entirely practical for you to divide as soon as queen-cells begin to appear in the hives—that is, providing, of course, you do not care to run for honey, and desire only increase; but I would suggest that you run a few of your colonies for honey, giving them an extra hive-body so that the queen can have plenty of egg-laying room. Thus prepared I hardly think they will swarm, and you will in the mean time be learning something about controlling swarming, even when running for honey.

J. G. S., Ohio.—The best method of refining beeswax is to melt it in an earthen vessel or in a wooden tub, within convenient access to a jet of steam. Pour into the tub or barrel two pails of water. To this add about a gill of commercial sulphuric acid. Pour in the wax and turn on steam. After the mixture has cooked half an hour turn off the steam and let it settle, then dip off the free wax from the top. If you can not get access to steam you will be considerably handicapped, as you can not very well use the acid method with a metal kettle.



THAT article by Friedemann Greiner in this issue, on the honey-bee, is decidedly interesting. It will bear careful reading.

EDITOR HUTCHINSON, writing to Editor York, May 1, had this to say of his father-in-law:

I remember with pleasure the visits that I made him when scarcely out of my teens, to talk bees. It was during these visits that I made the acquaintance of the girl who has since been my good wife.

And this is the way Mr. York philosophizes:

Yes, of course Mr. Hutchinson made those visits to "talk bees" to the father, and finally talked "honey" to the daughter. Great scheme that. Favorably impress the parents, and half the battle is won—some times.

THE following note from the General Manager of the N. B. K. U. will explain itself:

Friend Root:—I am glad to inform you that Mr. Buchheim, referred to in my Annual Report as having been put in jail on the ground that bee-keeping is a nuisance, has, through the efforts of the National Bee-keepers' Union, been fully exonerated and his bail discharged. This was a case where the Union appealed from the Justice's Court, which found him guilty of maintaining a nuisance, and had sent him to jail. I am just informed this morning of the success of our lawyer in the case. This is another victory for the National Bee-keepers' Union which is fully in keeping with its victorious record in defending the rights of bee-keepers. THOS. G. NEWMAN, San Francisco, Cal., May 16. General Manager.

I know our readers will be pleased to know of this result.

OUR OHIO FOOD COMMISSIONER.

A SHORT time ago I learned of a place where they were adulterating honey in a neighboring city. I procured a sample, and after testing the same it seemed to me that the stuff was almost entirely cheap commercial glucose. I wrote, forwarding the sample, to our Food Commissioner, Joseph E. Blackburn, at Columbus, the man who has been doing such thorough work in Ohio in the line of pure food, and this is the reply I received:

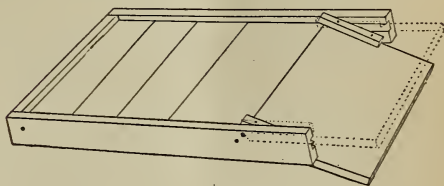
Mr. E. R. Root:—I have yours of the 13th, and note contents. I shall be very glad to bring action against any one selling adulterated honey or any other product. I shall always thank you to call my attention to any violations coming under your notice. The sample you speak of as having been sent by express has not been received, but as soon as it is I will act at once. I have no hesitation in saying that we shall certainly drive these goods out of the State, if adulterated.

I have noted your kind reference to me on several occasions, and assure you they are very much appreciated. Very truly yours, J. E. BLACKBURN, Columbus, O., May 16. Dairy and Food Comm'r.

I have taken the liberty of publishing this to show what an energetic man we have. His work has been so thorough and energetic that the food adulterators, especially some of the patent-medicine men, had been trying, it would seem, to poison the minds of the editors of some of our leading daily papers—in fact, doing every thing they could to injure Mr. Blackburn; but in spite of attacks from all sources he stands up rigidly to his duty.

WELTY'S BOTTOM-BOARD.

MR. C. W. WELTY, of Lucas, Ohio, formerly manager of the apiaries belonging to W. K. Vanderbilt, at his southern residence in Asheville, N. C., and now with us, has devised a bottom-board after the manner of the one here shown. You will observe that it allows



the usual $\frac{3}{8}$ space under the frames, and at the same time permits of an entrance 2 inches deep; nay, further: It provides for a slanting alighting-board reaching from the ground clear up to $\frac{3}{8}$ inch of the bottom-bars. If it is found to be desirable not to have more than $\frac{3}{8}$ space under the frames, and yet equally necessary to have a two inch entrance, Welty's bottom-board comes the nearest to filling the bill of any thing heretofore shown; but if, on the other hand, the deep space under the frames clear back is necessary, as well as the wide-open entrance, the Welty board will not be as good as some form like the Danzy.

THE CHAMPIONS OF LARGE COLONIES.

EVERY now and then I am receiving indorsements from bee-keepers, encouraging me to keep on talking about large hives. Dan White said to me a few days ago, "Why, I think nothing of running my ten-frame colonies three and four stories high, and it is these that give me the honey." J. F. McIntyre is another champion of double and triple deckers. Well, here is a sample from another of the prominent bee-keepers of California, Dr. Brodbeck, who writes:

"I have been very much interested in your advocacy of a double brood-chamber; and I can fully indorse the plan, having had four years' experience with it. My present apiary has been modeled in accordance with the method, and some time or other I expect to give a detailed report of my success."

Yes, indeed, I hope Mr. Brodbeck will tell us about it.

Now, although I have been talking large hives, i. e., two and three Langstroth brood-chambers, don't imagine for a moment that it is some new idea of mine—I borrowed it from others. The large-hive scheme I got from the Dadants; and the more I have tested it, the more I know the Dadants have been right all these years; and they know that their own countrymen in France back them up in it. In this country they have been ridiculed, almost persecuted, because they have insisted that the large hives would give them more honey than the smaller ones. But some day we shall wake up and find out that they were right. A great many half believe it, but insist that their locality is not adapted to the running of such large colonies.

Some one says, "Oh, yes! every one believes in two or more stories when running for ex-

tracted." Well, try it for *comb honey*; it will cost you nothing.

FRUIT-BLOOM AND SWARMING; WORKING BEES IN A THUNDER-SHOWER.

FROM all reports it is evident that this is the most remarkable year for fruit-bloom and swarming that bee-keepers have known for many a season. I do not remember a time when swarming was raging in the middle of May around Medina as it has been this spring, and my time of active experience in the apiary goes back—let me see; how old am I? Well, it goes back twenty years.

I never expected much from fruit-bloom, and certainly did not this year have the remotest thought that there would be any swarming. As a matter of course, our apiary at our out-yard (like every year) was just as it came from its winter quarters, or, rather, it had not got out of them, for the colonies were in their packing-cases, just as they were put up last fall. When neighbors reported that our bees were swarming I could hardly believe it. "Never mind," I said; "the queens' wings are clipped; the swarms won't go off; and, besides, this fruit-bloom will not last very long, and the swarming will soon let up." But it didn't. As it rained nearly every day it was not easy to go down on the bicycle and stop the rumpus. Finally, when the roads did get a little better one forenoon, I started off, notwithstanding the sky was black, indicative of an approaching thunder-storm. Arriving at the yard the big drops of rain began to fall. But I was not going to turn back then. I proceeded at once, rain or no rain, to pulling the colonies apart to destroy the queen-cells, and scatter the brood in two stories. I had fixed up a few colonies, and the drops began to come faster; but I knew I should be drenched in the rain, and thought I might as well "make a job of it." I singled out the colonies that were clustered out in front; went through them, destroyed queen-cells, and scattered the brood in two stories, putting empty combs between each alternate pair of combs containing brood. In shaking some of the combs, the raw honey spilled all over my shoes, and into the grass; and, except for the taste, it appeared to be about as thin in body as that from basswood. The ominous clouds began to fulfill their predictions. It thundered and lightened; but for the fun of it I thought I would see what I could do in a drenching rain, and I did see—or, rather, it was difficult to see through my glasses as the water streamed down over the lenses. The poor bees clustered on the combs in such a way as to shed water, and seemed to be reconciled to their fate. I knew a warm shower would not hurt them, and so kept on with my work until it began to pour so hard that it was almost impossible to see or do any thing. Of course, I was wet through. Finally, in desperation, I grabbed up my gear-case Cleveland, hobbled into the saddle, and then proceeded to ride down the clay hill leading from the yard; but the wheel slipped as if it were on a big cake of soap, and I had to dismount and paddle through the mud, *wheel on*

my back. I went over my shoe-tops in the puddles—tan shoes at that—and—

Just this very minute sister Carrie, flushed with her wheelride, and who has been up to the out-yard, comes in to tell me while I am writing these lines that there is a big swarm hanging on the bushes, and asking if I could not come and take care of them. I had supposed that swarming was all over at that yard, as the honey-flow had stopped.

A few hours later.—Let me see. Before the interruption I was telling you of my experience in plodding through the mud with my bicycle on my back, homeward bound. I need not tell you all the details. Suffice it to say, I did not get struck by lightning nor entirely covered with mud, to say nothing of being wet; but when I arrived home, I was, according to all accounts, "a sight for gods and men." I hived the swarm on my last trip, and came home without any casualties worth mentioning.

SAD DEATH OF OUR VETERAN FRIEND C. F. MUTH, OF CINCINNATI.

WE take the following (considerably abbreviated) from the *Indianapolis Journal*:

MORRISTOWN, IND., May 16.—Charles F. Muth, of Cincinnati, was found dead this morning in his summer home, on his 600-acre farm, just a mile west of town.

Mr. Muth was always very jovial; but yesterday he seemed morose, and told one of his former tenants, and, later, a neighbor, that there was a spot in his head that was paining him a great deal. He could always feel it throbbing. Fourteen years ago he suffered a sunstroke, and at times since then his head has pained him. In case it was suicide, it is quite probable that the pain caused temporary insanity. There is nothing else known that could have caused him to commit the act. He was about sixty-five years old; and besides the large farm, which was held jointly between him and his wife, he was the owner of a large seed and honey store and other property in Cincinnati. He was supposed to be worth several hundred thousand dollars.

He spent a good deal of time on his farm, going back and forth to Cincinnati almost every week. He was much interested in raising potatoes and sugar beets, and made a great many experiments with the farm, especially with sugar-beet culture, in which he was very successful.

A wife and six children, all grown, survive. They have been summoned from their Cincinnati home.

The latest evidence points to suicide. About 3 o'clock this afternoon Coroner Booher found the following letter on a tablet in the dead man's desk:

"If I should die on my farm, it is my wish that I be buried in the same graveyard with August Miller, and in the same simple manner. My honest debts must be paid.

CHAS. F. MUTH.

"Morristown, Ind., May 15, 1898."

It is impossible to get at the correct records now to find the amount of the mortgage on his six-hundred-acre farm here, but it is known to be about \$20,000. His farm is worth about \$40,000. No one here knew of the extent of Mr. Muth's financial trouble. He has often tried to sell his farm here, and about a year ago was offered \$32,000 for it, but would not take less than \$38,000. Mr. Muth was president of the German Protestant Orphan Asylum; also trustee of St. John's Church, and last year was elected a member of the board of control of Cincinnati. He made a large fortune in the honey business in Cincinnati.

Our friends may remember that, when I first became interested in bee culture, I very soon made inquiry in regard to the various bee-journals published in the United States or other parts of the world. I think my first acquaintance with Mr. C. F. Muth came through my desire to know something of bee-keeping in Germany. Friend Muth was very willing

to give me all the information in his power, and for many years we offered the *Bienenzeitung* to our German readers through friend Muth's kind services. We had become quite well acquainted through correspondence, and I had promised to make him a call and see his apiary on the roof of his store. One day, however, I was surprised to meet a tall fine-looking man who spoke English quite brokenly. He introduced himself as "Mr. Moot, of Cincinnati." He told me we had had some little correspondence, but somehow I did not quite catch on; but when I saw his name on some circulars, "Muth," then I knew him at once, and we shook hands over again and



C. F. MUTH.

took another start. He brought along some of his famous honey-cakes. I took him over home and introduced him to Mrs. Root and the children. Then he sent me a lot of his honey-jars and tumblers in which he sold the honey in such immense quantities. Many of our readers, especially the older ones, remember how ably friend Muth stood at the head, and represented bee culture in America among the German people. When I spoke of making him a visit, or putting the street-number on his letters, he said everybody knew him in Cincinnati, and I guess this was pretty nearly true—at that time, anyhow.

Of course, there were complaints occasionally from dissatisfied customers against A. I. R. and C. F. Muth, and others; but Muth and I were building up a trade with bee-keepers, and we both tried hard to keep things plea-

sant. I remember once, when there was some misunderstanding, saying to a friend who complained, that I had so much confidence in friend Muth, that, if *he* did not make the matter right, *I* would. Mr. Muth heard of it, and laughingly said he had been returning the compliment. When his customers complained of A. I. Root he would say, "I know Mr. Root, and he is a good man. You explain to him all about it; and if he does not make it all right, *I will*." This arrangement was kept up for a number of years.

Mr. Muth was one of the cleverest, most whole-souled, and generous men I ever knew. He tried to be right and fair; but when he met somebody who wanted to be unfair, or even if he got it into his head that somebody was trying to get more than was just, he sometimes showed that his good nature *might* give place to something quite different.

Of late years I have felt that our jolly, whole-souled friend had too much business on his hands. I have heard him speak a good many times about that farm alluded to in the extract above; and I fear, from what I have heard from those who had sent him money, that of late his prompt energetic business habits have not been quite up to their former standard. I wonder if there is not a wholesome moral here to more than one of the veteran bee-keepers who are reading these words. Suppose friend Muth had accepted the \$32,000 that was offered him for the farm, had paid up all his debts, got a little place near home, and taken things easy; might he not have been spared to cheer and give life to our national conventions for some years to come? * In view of the injury by sunstroke, he should have been careful about undertaking too much business. I know it seems hard to sell property for less than it is really worth; but we all know, and many from sad experience, that money and property have comparatively little to do with real happiness and contentment. I fear our poor friend brooded over his financial affairs, and imagined they were worse than they really were. From the statement given above I infer that, after every thing is settled up, there is a large property still for his wife and children. How gladly they would have borne his cares and troubles, and let him take things easier had he permitted them so to do! The bee-keepers of our land can remember our departed friend with grateful feelings for what he has done to bring about the present advanced state of bee culture, especially in the way of selling, and getting it into the regular channels of trade. Even if some of the friends have suffered somewhat by neglect, they may learn by the above that our old friend had been for years a sufferer; and we can afford to let a broad charity help us to forgive and forget whatever was not exactly as it should have been.—A. I. R.

* Too much property on one's hands, and especially where the property is in different places widely apart, has been the means, as I happen to know, of wearing out prematurely more than one good man. Shall we not, each and all, think over and over that beautiful and suggestive text that commences, "What shall it profit a man?" etc.



Wherein thou judgest another, thou condemnest thyself; for thou that judgest doest the same things.—ROMANS 2:1.

Some time ago I wrote, quoting the words of an eminent divine to the effect that praying for the presence of the Holy Spirit may result in making us very uncomfortable. The idea was a strange one to me, because I had until then supposed that the presence of the Holy Spirit was more necessary to one's real happiness than any thing else in the world. My old pastor, the Rev. A. T. Reed, once said at a prayer-meeting that there was one thing we could always pray for and feel that we were making no mistake; and that one thing was the presence of the Holy Spirit. I have prayed for this more of late than usual, because so many things have been coming up where I felt I was in danger of getting astray. I have felt more than ever before that I need God's guidance and wisdom. I have felt it especially, because more responsibility has been resting upon me. More people are employed here than ever before since our business began. Greater investments are being made, and greater temptations have been assailing me from certain quarters. The special temptation has been to be impatient in regard to small details. The temptation would come something in this way: Where hundreds of dollars are at stake we can not fuss, as we have been in the habit of doing heretofore, with the little transactions where perhaps only a dollar or may be a nickel is at stake. Some brother complains that he has not been used fairly. Our over-worked and worn-out clerks can hardly in justice take time to hunt the matter up, if it involves only a very small sum. I have been in the habit of adjusting these little matters by first inquiring what the sum is at issue. If the amount is small, and our friend is evidently correct and honest about it, I have felt that it would be wise to pay it *without* investigation.

Now, I know very well that right is right and wrong is wrong; and the *principle* of the thing is, many times, more important than the amount of money involved. Well, I have tried to fix all these things in a Christianlike way; but I fear I have been sometimes tempted to be a little rude and brief because of the thought that we are now a pretty *good-sized* institution. I have tried to remember our Savior's exhortations and parables, especially the one where he says that he that has been faithful in few things shall be made ruler over many things. I have *tried* hard to be faithful in little things.

Since praying for the influences of the Holy Spirit, as I have told you, I have greatly enjoyed reading the Bible, especially our morning lessons. Reading over one of our Sunday-school lessons a few weeks ago I was forcibly impressed by the example of the unmerciful servant. He owed a king ten thousand talents, or, as we would say, a debt of over a mil-

lion of dollars; but when he acknowledged his indebtedness and utter helplessness, and even fell down at the feet of his lord, promising to pay all if he would have patience, the debt was forgiven, and he was a free man. But almost immediately afterward, on meeting a fellow-servant who owed *him* only a hundred *pence*, he was so ungrateful, so base and vile, that he took his fellow-servant by the throat and demanded *every penny* (even when the poor fellow went down on his knees and used the exact words that he had just been using to the king), and cast him into prison without mercy. Of course, you are familiar with the whole story. It has been read and talked about and preached about until we all know it pretty well. But the part of it that took hold of me, and has hold of me even yet, is the scene where he took his poor unfortunate fellow-servant by the throat. In reading this passage over, even as far back as when I was a child, I used to wonder why Jesus presented such an extreme example as this; and, in fact, there are *two* extremes to the parable. The amount this man owed the king seems away out of proportion to the events of daily life. Nowadays it is very unusual for one man to owe another a million of dollars. Perhaps we have some such transactions among the wheat gamblers in Chicago, but surely nowhere else. *The amount* was extravagant, and the *forgiveness* was extravagant. Who ever heard of letting a man go scot free when he owed more than a million of dollars, not even asking him to pay a cent?

Well, if anybody *ever* felt gratitude this man ought to have done so. Why, what an *awfully* mean fellow he must have been! We are told this fellow "went out after he had been forgiven the debt." He had only just left the presence of the king; and before there was *time* for any great provocation he grasped his unfortunate fellow-sinner by the throat. I have heard about people who were "too mean to live." If there ever was such a man, this was the one. Now, Jesus never uttered a parable without having a good reason for so doing; and as we grow older we discover that there was an especial reason for many of the things that used to seem to us so extreme and severe. Why did he draw this picture with such tremendously bold and severe strokes? It has just been coming to me for a few days back that the reason of this is because there is more or less of the same spirit in all of us—in gratitude. My dear friends, you have given me many kind words in the years that are past. A dear brother wrote in a letter that is in my hands, "Mr. A. I. Root must be a very lovable Christian man." I crossed this part of his letter out, even though it goes into the Kind Words column; but since I crossed it out I have changed my mind, and I will put it in print right here. No doubt through God's grace I have been able to show at times a lovable and Christian spirit; but, oh dear me, nobody knows—at least none but the dear Savior—how I have battled to keep down the other and *unlovable* spirit. Let me illustrate.

A man did a very wrong thing. When I came to light, people generally were severe

lenouncing him. I myself used words that were terribly hard and severe; but they had scarcely passed my lips before I almost turned pale when memory told me that, years ago before I made any profession of Christianity, (of course), I myself was guilty of something like it; the harsh words I had just been using at night, with great truth at one time in my life, have been applied to *me*; yet my friends and neighbors were considerate enough to 'deal gently with the erring.' As I mentally considered the matter I got my breath, as it were, and said to myself, "May God forgive me;" but the presence of the Holy Spirit did not let me off quite so easily. I went about my work, but something kept ringing in my ears, "Thou art the man." David once unconsciously pronounced sentence against himself, as you may remember, and it was a terribly hard and severe one too. But the old prophet fearlessly raised his finger, and, looking the king fully and fairly in the face, said, unflinchingly, "*Thou art the man.*" Poor David! He bowed in humiliation and shame, and accepted the sentence that God had pronounced through the old prophet for his sin and crime. Now, is it the Holy Spirit that has been warning me, and urging me to be careful and merciful? I verily believe it is.

During the month of May I am always troubled more or less by dogs running over my plant-beds. You may say the plant-beds should be fenced up. Well, that would make no end of trouble, for they run clear along in front of the factory. Our small boys skip over after vegetable-plants, pie-plant, strawberries, and back again to customers. A fence would make lots of needless steps, and, besides, there are comparatively no fences in Medina. They are getting to be out of fashion. There is a superfluity of dogs almost everywhere. One of our daily papers, in discussing the matter a while ago, said with comic seriousness, "Really, now, wouldn't all the dogs do the work?" The point of the joke was that there is not any work, and never has been, for nine-tenths of the dogs. But then you know, I am not interested in dogs—at least not just now. Well, the other day I happened to look through the windows of the seed-room, and saw a good-sized dog walking back and forth in the soft rich round among my celery-plants, just after the rain. I went out to drive him away (just as I drive the chickens, you know) so he would not go back again; but instead of going through the paths, he seemed to go over the beds and do as much harm as possible. Finally he lay down and curled himself up right on one of my choicest plants. He was in a sort of "corner," and evidently did not know what wanted of him. A little stick about the size of a lath lay right handy; and when he would not get off the bed by scolding I gave him a mart rap with the stick, telling him to get up and go off. He whined with pain, and finally, thinking I was just doing it to torture him, he began to show fight, and snapped at me, tearing up the plants, and making more ruinous disorder every moment. I raised my stick to give another whack, and then remembered

about the man who took his helpless fellow-servant by the throat. I did not strike the dog any more; but I moved to one side, and exhorted him to get away, which he did. A little time afterward I saw a teamster in front of the store pick up his lines to start home. Then my attention was attracted by a dog springing up in front of the horses' heads, and showing by his antics that he was greatly pleased about something. In fact, he was rejoicing to such an extent that one of the horses stepped on him, and then the wagon-wheel ran over his tail, or something of that sort. But nothing could check his joy, for they were finally "going home." Yes, it was the same dog that spoiled my plants. When his master came to the store and stayed a good while he felt lost and troubled. Who knows how much a puppy may suffer when he finds himself without his master in a strange town? They would not let him come into the store, and so in his anxiety and trouble he got around to the seed-room, and was standing on my plants while looking through the window to get a glimpse of the one he loved. When his master and the well-known horses started to go home, then he knew his troubles were over, and I presume he thought in his dog mind that, if he once got safely home, he would never risk again coming to a place where a horrid cruel man pounded puppy dogs when they were not doing any thing out of the way at all—at least so far as they knew. You see my heart was in my plants. The dog did not know any thing about plants. If it had been explained to him that he was making mischief, and that the hard graveled paths, instead of the soft beds, were the proper place for a dog to walk, why, he would most gladly have kept in the paths. Now, the Holy Spirit, through the voice of conscience, seemed to be teaching me all this as by an object-lesson. The dog had his ideas and notions, and I in like manner had mine. The dog was as honest and well-meaning as anybody could be; and I—well, most of the time I hope and pray that I, too, mean well toward my fellow-men; but the Holy Spirit seems to be trying to teach me that I am far too ready to take people "by the throat." No doubt they need taking by the throat many times. When a bad man is deliberately and purposely wronging a child, if, when the matter is fully explained to him, he persists in keeping on, the strong arm of the law should take him by the throat and hold him in its grasp until he promises to behave. If a midnight assassin pushes into your bedroom, and you get him by the throat, by all means hold on. Choke the life out of him before he can use the revolvers he is provided with, if you can; but, dear brother, you ought to be very sure that he *is* an assassin, and that he is provided with revolvers. Many a man has killed a neighbor or one of his best friends, under similar circumstances, because he was not sure he was right.

There is another phase of this little story. It is a man who had been *pardoned* of a great debt who was so harsh and severe on his fellow-servant. They used to say in slavery

times that the most cruel overseer in the world was one who had been promoted from the place of a common slave; and somebody has said (but I hope it is not true) that the harshest and most severe housekeeper with her hired girls is the one who has been a hired girl all her life, and who has been suddenly promoted by marrying a rich man. Is it true that there is a tendency in this direction? After God has forgiven us our debts (or our sins), can it be true that at such a time we are less inclined to be merciful to those who are indebted to us? From the very fact that this thought takes a prominent place in that wonderful prayer, may we rightly infer that we are constantly in danger of *forgetting* what we have said in our devotions, "Forgive us our debts as we forgive our debtors"?

There are bee-keepers among our readers who have struggled hard to pay off the mortgage on the little home. After years of toil and prayer, God has seen fit to grant your petition. The debt is wiped out, and the prayer is answered. Now, are you going to be a better Christian*—are you going to have more faith after God has lifted the load, or are you going to be proud, and say by your actions, "I am all right now, and do not need to work as hard (nor to pray as hard) as I have been doing. I can take care of myself now pretty well"? Does that sound pretty hard and rough, dear brother? Well, it suggests what I have found in my own self. I am getting old, and it is right and proper that I should be relieved from some of my cares and worries; but if the relief induces me to pray less, then it may not be a very good thing to give me rest, after all. A few days ago I sought the old spot where I have prayed so many times; and my prayer was something like this: "O Lord, I come to thee again in trouble. I come to thee because thou has helped me and shown me a way out of these same troubles during all these years that are past and gone. Thou hast piloted me safely through many perplexing trials; therefore I come to thee once more in faith believing. If, however, it is thy will that I should bear this grievous burden for Christ's sake, give me grace and strength to bear it patiently." Do you know that I felt happier and stronger right away? In fact, I felt almost glad that the trouble had come, for it had sent me back to the feet of my Savior. Yes, it had sent me very low at his feet—lower than I had been for some time before. Now, do you think it is always best for us that we should be *spared* these trials? Why, if every thing succeeded and nothing

went wrong, I am afraid I should get to be lazy and indolent Christian; and I think the servant who took his brother by the throat must have been a lazy and indolent servant. Cowards are always lazy and indolent.

Now, even if the presence of the Holy Spirit does make one at times feel very uncomfortable, I am going to continue to pray that his influence may be ever near me. I hope I may chide and restrain me when I am chasing the dogs out of the garden in an unchristian like way; and may he ever so much more chide and restrain me whenever I seem called upon to stop iniquity and fraud and injustice wherever I may meet them.



PURE WATER TO DRINK.

I am ashamed to think that I have lived be toward sixty years old without having ever discovered what a delicious and refreshing beverage pure water is. I am ashamed to think I have been so many years in ignorance of one of God's most precious and greatest gifts. I have now been drinking distilled water in considerable quantities three or four times a day ever since we got the Sanita still; and the more I drink of it the better like it. You may urge that it costs something. The proprietors of the machine say it costs two cents a gallon when you burn gas to produce it. But let us say it costs five cents a gallon. Lemonade, cream soda, and other "temperance" drinks, cost five cents a glass. Surely we can afford it when everybody may have it at a cost of only five cents a gallon; and it does not seem to me I should ever more want summer drinks, especially sweetened drinks, when I can have pure water instead. It is not because it is a new hobby notion I have got. Several times I have tried drinking cistern water instead, and found it as I used to do to be sure it contained germs, either animal or vegetable. But the cistern water does not "set" as well as does the distilled water. It leaves a suspicious taste of some foreign matter in my mouth, and the digestive apparatus complains just a little that it does not have the solvent and refreshing power of *aqua pura*. I have read before that distilled water possesses solvent properties considerably beyond those of any other. I have been told that it is much more wholesome, especially where there is any tendency toward indigestion; but I never believed it was possible for one to learn to enjoy at *thirst* for pure water as I do. The rain water at Bermuda is something like it; but rain water is pretty sure, unless exceeding care is exercised, to dissolve something from the roofs of the houses, or from the stone tanks that contain the water. I suspect the principal impurity in the average cistern water of towns and cities comes from coal smoke that

*Dear friend, after God has granted your prayer are you sure you always remember to thank him, as you proposed at the time of your earnest petition you would do? It may not be financial troubles. Suppose a loved one has been near death. In very anguish of spirit you have prayed that the precious life might be spared. Now look back through the years that are past, and answer me truthfully: When God granted your prayer, did you afterward love to read your Bible more? Did the answer to prayer prompt you to kneel to him oftener in thanksgiving and praise? Sometimes—nay, frequently—God does not see fit to spare the loved one. And is it not true that affliction sometimes brings us nearer to him than granting our requests? Alas, poor humanity! Truly, "he knoweth our frame; he remembereth that we are dust."

ills on the roofs, for cistern water has a distinct taste of smoke to one who has been accustomed to drinking *distilled* water for several days. Another thing, the reservoir of the sanitary still, after water has been boiled in it for a week, shows a darkish deposit that looks as if it might be smoke or other impurities taken from the water washed off from the slate roofs. If you should happen to prefer distilled water to either tea or coffee, it might be actual *economy*, rather than an expense, to purchase and use a Sanitary still. When this whole big world of ours has a craze for drinking pure water, and for *telling the truth* (for I declare the one makes me think of the other), what a millennium we shall have!

Mr. J. E. Blackburn, Ohio Dairy and Food Commissioner, in a recent address said as follows:

Is it any wonder that a child that has been raised on soothing-syrups, or other preparations containing morphine, should take to cigarettes before it is able to save its mother's apron-strings?



ONE OF THE IMPROVEMENTS IN WHEELS FOR THE YEAR 1898.

It is very poor policy to run any kind of machinery when there is no reason why it should be running. The man who lets his windmill run and wear itself out because he is so negligent to stop it is a foolish man; and the manufacturer who lets belting and shafting wear out in like manner, when they might just as well be standing still, is not a prudent and economical man. Well, in the same way we have for years been running the chain and sprocket-wheels on a bicycle when they might as well have been much of the same standing still. Yes, more than that: lost bicycle-riders go through the motions of pedaling when the muscles of their limbs might be resting, so as to be ready for the hill at the distance. There has always been an objection, however, against removing your feet from the pedals, especially where the pedals are bad, and where you need perfect control of your wheel. The new 1898 Eclipse is an automatic arrangement whereby the pedals, chain, and sprockets may all be at rest, including the legs of the rider, whenever he is going down hill. Whenever you wish to use the pedals, just pedal ahead.

Now you may say, "What is one going to do when he is under the necessity of back-pedaling?" Well, the Eclipse folks fix this by arranging an ingenious automatic brake that operates whenever you move the pedals backward. When I am off on a trip with this wheel, *especially if I have a strong wind at my back*, I am pedaling only half of the time; or you know that, on any trip, no matter which direction you go, providing you return

to the starting-point, there is just as much down hill as up hill, and with a good wind you can rest whenever there is level ground and good roads. I use this wheel constantly in going back and forth between the house and the factory, a distance of some 400 feet, on stone flagging. As there is a gradual fall of about 6 inches in 100 feet, my wheel carries me nicely over the distance without touching a pedal at all.

Now, I have discovered two very nice things about this wheel that I believe even the manufacturers do not know of—at least they have not mentioned them in their circulars. Whenever you are going over a piece of road such as we have around Medina every spring, you do not need to have your pedals strike the ground, even if you run into a wagon-track that is ever so deep. Get up sufficient momentum to get through the bad place, and stop pedaling till you get out of the rut.

Another thing, who has not been annoyed by having a wheel that is in real good order, going ahead or going backward, or tumbling down, whenever one tries to stand it up anywhere? With the Eclipse, just back the wheel a few inches and the rear wheel is locked by the brake. When you want to start, push it forward and it is all loose again.

The second improvement in wheels that I have noticed particularly is the "gear-case." Ernest and John and Constance have each a Cleveland thus protected. We have not had a very dusty time yet this spring; but they say the chain never gets dusty or gritty, no matter if you run through the mud and rain. This is quite an important item; for the easiest-running wheel in the world, if the chain is exposed to dust or water, will gradually get to running harder and harder for every mile you travel until you stop and clean off the chain and give it a coating of lubricant.

And this brings us to a consideration of the chainless wheel. I have had one of the Columbia chainless that cost \$125, for about a week past, and, somewhat to my surprise, I am forced to admit that it runs as easily as any chain wheel I ever rode. It is certainly equal to any for climbing hills, and, so far as I can see, the claims made by the Pope Manufacturing Co. are not at all exaggerated. As to whether it will keep running still *easier* instead of harder, as long as it is used, only time can determine. The Columbia chainless is certainly a very nice thing. It does seem, however, that \$125 is very much more than such a machine need cost. My impression is that, after the machinery has been perfected for making these chainless wheels, they can be sold at as low a price, or possibly less, than the ordinary chain wheels. The first cost of a factory for making the chainless is, however, probably considerably more than for chain wheels.

A VISIT TO THE JORDAN CELERY-FARM.

May 26.—Since the above was written I have made a trip of 16 miles to the Jordan celery-farm; and I am happy to say that the chainless is not only equal to, but ahead, in point of ease of running, of any wheel I have ever before ridden, especially in climbing

hills. On a part of my trip there were some sandy and dusty hills; and when many teams made a cloud of dust as I was climbing along the hill, it seemed strange that I did not as usual feel the effect of dust on my chain. The beveled gears are perfectly inclosed, and run constantly in thick oil. This one fact alone is a most important item. And, again, with the gears there is almost no lost motion—no jerk or play, or clank of machinery when you change from pedaling ahead to back pedaling.

I found the celery-farm looking wonderfully nice, for the recent abundant rains have kept their plants going almost without irrigation. I had planned so as to see the effect of the sunlight across the swamp near sunset. Away off in the distance the rows ran toward the setting sun like threads of emerald tinted with gold. I never saw plants before of such beautiful color, and so near alike that there is neither a poor one nor a best one in the thousands after thousands, the bright green of the plants contrasting most beautifully with the almost jet blackness of the damp mucky soil.

The onions were also looking remarkably well. I have told you of their troubles from blight in former years. Well, they think they have discovered a remedy by the use of a dressing of common salt. Less than ten miles from Creston, in Wadsworth, there is a great salt-factory. This salt is pumped, as I have told you before, from a well 1700 feet deep; and then there is a sort of waste product, in the way of salt, that is furnished cheaply for agricultural purposes, that our friends are utilizing on the celery-farm.

Although the new (close) celery culture has not been a success heretofore, they are still trying about half an acre again this season. I believe the blight was a little worse in the close planting. There was also more trouble by the plants running up to seed. This latter was probably occasioned by a lack of sufficient water. To remedy the blight, salt had been sprinkled all over that half-acre. At one point a new hand was set to sprinkling. I presume he *thought* he could do it all right; but he got on too much, so there is one spot where a great part of the plants are killed out. Salt may be good for certain purposes; but be careful about getting on too much. I suggested a manure-spreader, or some other kind of machine for putting it on evenly.

Jordan Brothers are using chemical fertilizers to some extent; but they told me that, although it answered for a time, they found there must be, once in two or three years at least, a good dressing of stable manure in order that any commercial fertilizer might do its best. The season has been so wet thus far that the Breed Weeders have not been used very much. The consequence is, gangs of men and boys were at work with their hand cultivators, and down on their hands and knees getting the weeds out. This is the only serious drawback to the Breed weeders and other machines of that type. They can not be used in wet weather; and if the weeds get ahead of you during wet weather, you have

got to get them out with cultivators and by hand work before you can get your weeder going. I am glad to notice that these weeders are all getting to be very much lower in price. Machines that sold for \$10 a year ago are now offered for but little more than half that amount.

A SHORT SERMON IN REGARD TO DELAY IN FILLING ORDERS.

A. I. Root Co., Dear Sirs:—"Thou hast loved righteousness and hated iniquity."—HEB. 1:9. A very nice text to preach a sermon from; but how about my order, No. 64,712, that I sent in six weeks ago, and which *you* said would be delayed a week or ten days longer than usual? You usually filled orders for me inside of ten days. Ten days in filling and ten days delayed make twenty days. I have looked for the goods ever since the twenty days were up; went four miles to the depot five times to see if the goods were there; disappointed all my customers; made enemies; have had no end of trouble and vexation of spirit, just because of your utter indifference to the above text, and disregard for "doing unto others as you would have them do to you."

To be sure, my order was small; but *you* say that small orders receive the same prompt attention as large ones. Then, again, I have dealers' rates, and there is not so much money in my orders as there is in others; but *you* say that money is not your god consequently that should not have delayed my order twenty-two days longer than *you* said it would.

You say you are not greedy for more jobs. Then why are you running advertisements in all the leading agricultural and bee papers, and voluntarily sending catalogs out all over the country?

I expect this is all the "boys'" fault; but they should have been trained to "love righteousness and hate iniquity." I have written the above to show you how matters appear to the eyes of a dear bee-keeping friend. I have written you several times in regard to the order, and have not received any reply. You have my sympathy for not being able to handle the *whole* supply business, as I know it grieves you to let some of it go; and if you want me and my customers to read GLEANINGS with less skepticism you will ship my order at once.

Yours truly,

Oceola, O., May 17.

E. B. FOSTER.

P. S.—This letter would be nice to fill up some of the extra pages of GLEANINGS.

At the close of the above letter our friend seems to think there is some doubt about our putting it in print, even though he suggests doing so. In choosing matter for GLEANINGS it is not a question as to whether it would be for *our* interests to publish certain letters so much as it is whether such letters will prove to be a general benefit to our readers. In the present crisis I think the above will be a benefit, and I think it belongs among what might be called "kind words," even though some of the charges are pretty severe. The brother calls himself "a dear bee-keeping friend," and I believe he is and would be now if he were not considerably vexed when he wrote. I do not blame him for feeling vexed, and yet I do not see how either myself or the boys can help the trouble he mentions. When we say a "week or ten days," especially when the letter is one of a thousand, so the writer can hardly make a personal matter of it (even if he tried ever so hard), the expression must be taken with considerable latitude. In regard to going to the depot five times to see if the goods were there, I would urge the friends not to go after them until they have received a notice of shipment. When I saw how things were going, I myself employed an extra clerk, and invested a good pile of dollars in postal

ards. I employed this clerk expressly to see that a postal card went to *every* customer just as soon as the goods were put on the train; then our friends did not have to wait for the bill of lading, which is sometimes several mails behind, in getting copied, recorded, etc.

I fear our good friend Foster does not recognize the fact that he is only one of a thousand. It is our duty to consider each and all, as well as any particular person. Our expression that "small orders receive the same attention as large ones," is true. Friend Foster, if you were to interview the clerks here in our office, and all over the establishment, they would be astonished at the charge you make, that there is *anybody* around here who is pushing the large orders more than the small ones. If a railroad is almost ready to go, of course we make extra effort to get that *car* started. To do this our packers have frequently worked till midnight, and then been at their posts at the regular hour in the morning. But it was not because we got more money for the carload, for really we do not get as much for the same goods, but because a great quantity was held back just because of the lack of a few things. Neither is anybody around here looking over the orders to see which one gives us the most profit. Every member of our force is, I am sure, trying to get every thing off out of the way that can be got out. Certain goods are on hand, and can go as well as not. Others have to be made to order, and we must wait for them. Dear brother, it certainly was not a love of money that delayed your order. In fact, that never entered into the consideration. Every member of The A. I. Root Co. is a professing Christian, and you do not know how it pains us when we hear the suggestion that *money* is our god. God forbid! I am sure you do not mean that, dear brother, and that you will feel sorry you said it when you see this.

Yes, you will probably find our advertisements running in the agricultural and bee papers. Our contracts for advertising were all made up last fall, and paid for in advance, or that is the way we do business. We could perhaps have these advertisements taken out and put in at a later date, and we have seriously considered doing so. We are *not* now sending out catalogs except to people who call for them. You may say we should stop doing this. But, dear brother, our catalogs contain a vast amount of information that is of great value to many people, even if they do not trade with us. Another thing, a great variety of goods are ready to go by the first train. Spray-pumps, smokers, wheelbarrows, enamel cloth, seeds, etc.—in short, almost every thing that we do not manufacture is kept in stock in great quantities ready to go off by the first train. Bee-hives and sections, and other things made in the wood-working departments, are the only things in the line of goods that we have to wait for. We have kept ahead pretty well on sections by purchasing almost all that any manufacturer in the United States had to spare.

Associated as I am with my sons and sons-in-law, it would ill become me to shirk re-

sponsibility by saying the delays and mistakes were "the boys' fault." I have never said that yet, and, God helping me, I do not mean to. If they make mistakes, even in doing things that I sometimes disapprove of, I expect to stand by them and help them out; and I hope God will give me grace so that I may forbear even saying, "I told you so." The state of affairs just now is bad in the respect you mention; but there is no civil war in our ranks, thank God. The boys have been trained to love righteousness and to hate iniquity, even if I did not have the training of them all; and, so far as becomes me, I expect to train them every day in God's ways. One of my pleasant surprises of late, however, is that these boys are beginning to train me sometimes in better ways; and I hope I shall never be above accepting wholesome truths from those who are younger than I.

I am afraid it is true that you and others have written several times to hurry up orders, without getting a reply. But this is a new departure in our business. I do not know but I shall have to get still another clerk and another lot of postal cards, and when a complaint comes in regard to delay I will have this new clerk send a card saying we can not help the delay, and that we positively can not spare a clerk, who has the ability and experience, to go into the mass of unfilled orders, search out a certain one, and tell just why it can not go. Dear friend, you seem to think it is a simple matter to ship your order at once, and let all the rest go. We would gladly do it if we could, and still keep right before us the golden rule—that is, be just to all, and not put the man ahead who complains the loudest.

In writing this I have considered that, by the time it gets before our readers, we shall perhaps be getting out of the woods—at least I hope so. May God give grace and wisdom and patience and forbearance all around during this busy season; and may he help us to be helpful one to another in the very widest and best way.

Tobacco Column.

The following was handed me on a slip of paper. I do not believe there need be very much discussion in regard to it. Some may think it is too strong; but let every one consider it carefully according to the dictates of his own conscience. I think it will do good:

TOBACCO IS A	
Curse in the postoffice,	Curse to your good name,
Curse in the depot,	Curse to your manners,
Curse on the train,	Curse to your religion,
Curse to your land,	Curse to your church,
Curse to your health,	Curse to your boys,
Curse to your income,	Curse to your morals,
Curse to your body,	Curse to missionary work,
Curse to your country,	Curse to the air,
Curse to your teeth,	Curse to men,
Curse to your breath,	Curse to an office,
Curse to your life,	Curse on the street,
Curse to your clothing,	Curse to man's rights,
Curse to your family,	Curse to God's rights.

By the way, our daily papers, which are certainly not biased very much in the matter,

have been telling us repeatedly within the past few days that the cigarette habit was throwing out more men who enlist in the army than any thing else. And in connection with this let me mention just another point. A pamphlet or primer, or whatever you may call it, was thrown into our home or on to our porch, by somebody, I do not know who. It was the advertisement of a special brand of tobacco. The front cover was embellished in colors with an indecent picture. I do not think it came through the mails, because I feel sure such a thing would never be permitted by Uncle Sam. An agent must have been employed to throw it around to the houses or give it to the schoolchildren. In the back part of the book was a defense of cigarette-smoking; and they had got learned chemists, at least so they claimed, to certify that cigarettes on the Chicago market contain nothing deleterious to the health. They said cigarettes are made of pure tobacco, and, in fact, contain *less* nicotine than cigars. We will not stop to discuss that point just now; but if there are those who are inclined to defend tobacco who read GLEANINGS, let me beg of you, dear brother, to consider this one fact: The men who put out a pamphlet in defense of their tobacco business deliberately planned a picture for the outside cover that would surely do harm to your boy or mine, unless the boy has been so carefully brought up that he is almost beyond the power of any thing in that line. Why should the tobacco habit be always found linked arm in arm with licentiousness and things too low to be even mentioned in the pages of a home journal? Just now the Christian men and women are having a regular fight to stop the work of putting vile pictures in packages of cigarettes, thus getting them into the hands of our boys without going through the mails, and especially into the hands of that class of boys who keep such things carefully concealed from the eyes of their parents. Has GLEANINGS been waging war too severely on the tobacco habit? I leave you to decide.

A NEW KIND OF HOUSE-FLY.

Could you recommend any thing for destroying a certain kind of fly that swarms into the house every fall after the first frost? They fill themselves up with buckwheat honey, and persist in hibernating all over the house, under picture-frames, and between the curtains. They will swarm in when the windows are closed. I can not "screen" them out as we do the common housefly. They come in through the smallest crevice. I have tried to smoke them out with sulphur, and have used insect-powder, but it doesn't do any good. They are a terrible nuisance. They trouble us all winter long. When it is mild weather they will fly out the same as bees do, and then come back again. They soil every thing badly wherever they hibernate.

MRS. NORMAN CURREY.

Evans, N. Y., March 22.

My good friend, Mrs. Root has been worried and annoyed more than I can tell by just the kind of flies you describe. Our windows are balanced with weights. She thinks the flies crawl out of the holes where the cords run through over the pulleys. They act just as you describe, only a great deal worse. Our windows in the attic are sometimes literally black with them. I told her to open the win-

dows a little and let them out, and then the would never come back. When it is warm enough they roost all over the side of the house, and then manage, by some hook or crook, to get in again through the crevices—at least, she thinks they do. I have advised the use of bisulphide of carbon, but we have not yet got around to trying it. That will get into every crack and crevice wherever flies can creep. But you would have to vacate your rooms during fumigation. We are thinking of saturating little balls of cotton with the bisulphide, or "fuma," as it is called for short, and drop these saturated balls in the holes right where the cords run through the casing. Will the entomologist at our Ohio Experiment Station tell us about this new fly? As a rule we are glad to see *new* things; but when it comes in the shape of the fly described above, we feel *gladder* to see them clear out and go away, even if they are new. I will explain to the friends who have not as yet seen these new flies that they seem to be a sort of blue bottle fly. They make a horrid buzzing when you light the lamps. I never knew before they were partial to buckwheat honey, but may be you are right.



SOME OF THE NEW STRAWBERRIES—ONE OF MY HAPPY SURPRISES.

We have been picking strawberries that were started under glass, for a month or more, and Earliest and Darling, that were not under glass at all, for the past three or four days. The Earliest was only about three days ahead of the Darling. The Darling gives rather larger berries. On account of the hot weather and lack of sunshine, both are rather tart this season. Well, my happy surprise was not in regard to the Earliest nor Darling either, but it was in finding this morning some great big Nick Ohmers, not red on one side, but red all over, and only three or four days behind the Earliest in earliness—perhaps right *with* the Darling in that respect. But the Nick Ohmers are ever so much larger than either of them. We had such a call for plants last fall, at 25 cts. each, that we did not save very many Nick Ohmers. In fact, there is only one bed containing about fifty plants, and these were put out very late in the fall. Of course, they have had good cultivation and plenty of manure. But this would not quite account for their being away ahead of almost every thing else in any way that I can see, unless it is in being extra early. Why, an acre of these great big berries, large, handsome, and earlier than any other large berry in the field, would be worth a lot of money. I would give something to be able to present to the readers of GLEANINGS a picture showing the Nick Ohmers as they stand in that bed this morning. I wish others would report whether they have had a like experience with the Nick

hmer. Michel's Early, that we used to call read of all the others, is not anywhere near peeing at the present time, May 30; but, to ll the truth, Michel's Early has not been ssed with quite as much as these newer nds—at least, not this season. You see, I ant to be honest about it.

Now, none of these varieties mentioned is kely to bear the great quantity of berries at some of the later ones do—say Haverland, arfield, Parker Earle, and last, but not ast, the Clyde. I do not believe there is othier berry on our grounds containing such eat heaps of green ones at the present time the Clyde; and I notice the reports are now eatly in favor of the Clyde as a tremendous arer. We have potted plants now to fill all ders for Earliest and Darling; and we have unners already in the pots, of almost all other nds we advertize, potted in jadoo fiber.

ANOTHER SURPRISE.

Yes, and this is a happy one too, even if it es run against the one above somewhat. n page 407 I gave you a glimpse of my plan hill culture for strawberries. Well, in der to test all the different varieties worked this way we have to put in one or more ws of all the kinds we could get hold of; id I am watching with very much interest e behavior of the different plants, with run- ers kept off, and constant cultivation in ring as well as fall. Well, yesterday, after eaking of the Nick Ohmer's earliness, I ent up through that hill-culture patch to see ow the others were behaving. All at once I as startled by seeing a great big strawberry, pened all over, then another and another, til I noticed there were six rows of berries ith quite a good many ripe ones right out in e open field. Now, there were a few other nds that had begun to turn just a little, but othing like the six rows. What were they? Why, as sure as you live it was our old friend io. Michel's Early was near by in another atch in a matted row, but there was not one ery colored in the lot. The Earliest and arling had just begun to color, but they were anted rather later than the Rio in the same atch. I really do not know why the Rio ould be ahead of every thing else in hill ulture, unless such constant stirring of the ound suited the Rio better than it did any e other kinds. That is not quite it either, r the other kinds are making most tremen- ous growths of foliage and runners. Yes, e greater part of them are putting out run- ers, even before the fruit has colored. But is constant cultivation seems to have hurried e Rio forward, and did not the others—not ven the Earliest and Darling. The Rios are eat strong thrifty plants, with stout runners ready out, besides a very fair crop of fruit it going to bear. Now, this thing illustrates point: Under a special system of cultivation e Rio is the earliest good-sized berry we now of. And by the way, friends, there is ing to be an enormous crop of berries on at little plantation put out last fall. They ere all potted plants, however; or if not pot- ed they were set out with our new strawberry-

transplanter that I have described and illus- trated; and this experiment demonstrates one thing to my satisfaction: With the right kind of culture you can grow an enormous crop of berries from potted plants *in only nine or ten months after they occupy the ground.*

DAMAGE TO THE FLORIDA ORANGE CROP DURING THE PAST WINTER.

The freezes of the past winter hurt us a good deal worse than at first appeared. Since I wrote you we have had cold that cut off the bloom of orange-trees, and reduced the crop to one-fourth what was expected. We now propose to adopt methods that will make us absolutely secure against injury to our groves from cold, and thereby make orange-growing more profit- able than ever before.

W. S. HART.

Hawks Park, Fla., May 10.

Friend Hart, we are very sorry for your losses by frost; but I am greatly interested in the method you propose, to get ahead of the frost. You may remember that I saw a grape-fruit tree that once bore a crop that sold for \$50 as it stood on the tree. Now, a half, a fourth, or even a tenth of that amount would pay for some sort of protection of canvas that would render a tree safe for a whole winter or several winters. If it were not for the fact that you people have orange-trees of such tremen- dous height and breadth of expanse we might talk of a high fence with a canvas covering to the whole orchard. Has any one yet ever ventured on such an experiment? The cloth can be rolled up and unrolled according to the plan given in our book on tomatoes, with comparatively little expense, even if it covered a whole acre of trees; and then how happy the proud owner would feel (under that canopy) during a frosty night! You see he would have nice fruit when everybody else was short, and this would help to pay the expense of his plant.

Mr. Root, if you want to raise celery come to Florida. A gentleman in Hawthorn planted a plot of ground 60x200 feet, and shipped two solid carloads of celery from the same, netting at the rate of \$4000 per acre.

Mannville, Fla., May 19.

M. W. SHEPHERD.

That is right, friend S. Let us know what can be done in Florida. The gentleman prob- ably had water unlimited, and some excellent brand of fertilizer, with perhaps good ground to start with. I wish you could tell us more about it, and especially what sort of manure was used. I would travel quite a piece to see such a block of celery.

THE FARMERS' HANDY WAGON.

We have now in use one of the wagons pictured on page 319 in our April 15th issue; and I am glad to say that it is proving to be extremely handy. We are be- ginning to appreciate all the points mentioned in the letters on the page referred to above, and your humble servant appreciates the bicycle-path it makes where- ever it goes on the highway or around on our own pri- vate grounds. When our big team broke off the tongue (which was made of a piece of cross-grained timber) there was quite a marmur while we were obliged to let the wagon lie still two days because our wood-working people could not stop to put in a new tongue made of good hard straight-grained timber. I would advise the manufacturers to hunt up some nice sticks on purpose for wagon-tongues, even if they do sell the whole thing at a low price. See advertisement in another column.

Donations for the Shawneetown Sufferer.

Please send \$1.00 to Thos. McDonald and charge to my account.
Newhall, Cal., May 12. R. WILKIN.

I send 25 cts. for Mr. Thos. McDonald, Shawneetown, Ill. I can send him lots of queens. If he can get bees near home, by the use of laying queens he can increase very fast.
Click, Tex., May 10. L. L. SKAGGS.

Mr. A. I. Root:—I desire to express my appreciation of GLEANINGS. I am not up in the bee-line, therefore I speak only of the editorial part, and particularly of the April number, in which you quote Luke 6:38. I thank you for the article, which is really a good spiritual breakfast on a suburban train. I do not understand that your appeal for Thos. McDonald, of the Shawneetown disaster, is extended only to bee-people; therefore I hand you herewith one dollar for him.
Chicago, Ill., April 22. L. H. NELSON.

KIND WORDS FROM OUR CUSTOMERS.

I think GLEANINGS improves with age. There is quite a difference since I began first to take it, nearly 20 years ago.
Lindsay, Ont., Feb. 23. JAS STORER.

All the garden seed I got of you last year did finely, especially the cauliflower—199 heads out of 200 plants set.
Parkman, O., Feb. 10. F. P. CLARK.

GLEANINGS is a visitor at my house every two weeks. I have not missed a number in seven or eight years. It is the best journal I take.
Rhinelander, Wis., July 13. CHAS BROOKS.

I am very glad that you received my order and gave it such prompt attention. The goods came in good shape. Foundation and sections are very nice. I am well pleased. My bees are all strong this spring.
Defiance, Ohio, May 5. WESLEY KENCIG.

The sections are very nice, and the wax is all one can expect it to be. Please accept my thanks for your promptness, and the nice goods you sent me. You saved me quite a speck in shipping the goods by freight.
Pleasant Ridge, N. C., May 3. W. Z. FERGUSON.

Please allow me to express my thanks for the finely illustrated circulars you printed for me. Persons who see them say that The A. I. Root Co. shall have their job work in the printing line hereafter.
Scio, O., Apr. 17. T. H. COOK, M. D.

I received your notice the 11th and the freight the 17th. It was in good condition, and exactly as I ordered; in fact, it was as satisfactory as if I had been at the factory myself. Your hives and equipments are as complete and perfect as any that I have seen anywhere, and I shall not hesitate to recommend them.
Oxen Hill, Md., Feb. 18. S. B. COX.

Yours of the 22d, stating goods would be delayed from one to two weeks, is received. I will say it won't inconvenience me very much, so long as I get A. I. Root's goods. I appreciate your difficulty in being behind with your orders, and will wait patiently till my turn.
Morris, Ill., April 26. W. E. DAGES.

[We in turn appreciate most thoroughly the spirit of this letter.—ED.]

Order 62,220 came in on the eve of the 18th. I set every thing up and painted it yesterday. I want to say that every thing checked out exactly. Thanks for your care and promptness. So accurately are the pieces cut, and so explicit are the directions, a way-faring man though a fool need not have any trouble in putting things together. If I can drop a bug in my neighbor's ear in your favor, I will gladly do so, knowing that you will treat them right.
Palmy, Texas, Mar. 20. W. B. BARBEE.

CIGARETTES, OPIUM, ETC.

I wish to say one thing about cigarettes and the opium contained in them—page 26. I am sorry to say that I for about five years used them, and think the opium is not in the tobacco itself, but in the paper that the cigarette is made with, so the smoker gets the opium just the same. I thank God, my good wife, and Mr. A. I. Root, that they have caused me to give up the use of the weed.
Los Angeles, Cal., Apr. 25. WILL A. SHIELDS.

Inclosed please find \$1.00 to pay for the 500 cards. They were O. K. We appreciate your interest in our church work in doing it with such promptness, and at such satisfactory prices.
Grafton, O., March 22. W. A. LEARY.

[Perhaps I might say, by way of explanation, that we are doing quite a little work in the above line for pastors and Sunday-schools, etc. With the facilities we have, very likely our prices, postage included, are less than those given by ordinary local printers.]

GLEANINGS is surely worth many times its price for its safe guide and guard against so many cunning frauds and swindles that are getting so many dimes and dollars they could not get to have. I would always be a friend to GLEANINGS for this one thing if no other. By the way, I got caught on the electropoise hook, and lost just \$8.00. It was really an injury to my health, and I wish you would say in GLEANINGS, that, if any one of its readers contemplates trying one of them, "Don't do it, never, whatever you do; have nothing to do with the concern." All they want is your money, and they will get it if you fool with them.
Cumberland, Miss., March 10. JAMES L. ARNOLD.

Mr. A. I. Root:—I am not taking GLEANINGS for bee culture, as I am satisfied I am not on that line; but the Home talk is worth that much to me and my family. If you are not a Christian, you are certainly the veriest hypocrite I ever read after. Excuse me for using such an expression, as I have so often been deceived that I hardly trust anybody until tested thoroughly. Many are called, but few are chosen. Of course, you indorse the sentiment expressed in the tract you copy in March 15 GLEANINGS, from A. F. Cowles; and, if you do, you do not visit the oath-bound lodges where I have heard the name of Jesus forbidden to be used. Everything for Christ is my sentiment, whether I meet it or not.
Elberton, Wash., Mar. 24. R. I. EVANS.

My good friend, you judge correctly. Like yourself I try to belong to Christ Jesus and to him only; and as he once said, "In secret have I done nothing." I never could see my way clear to uniting with any organization where a promise of secrecy is required. Since I have been trying to lead a Christian life I have had no secrets, and nothing to conceal.

Reading GLEANINGS with the "ABC" has interested me greatly in the "Home of the Honey-bees" and all the Roots, especially the father and grandfather, Mr. A. I. Root.

By the way, why are all bee keepers Christians? I gather from their writings they are. All dentists are not.

One question, please: My bees build hexagonal cells on round brood foundation. Do they all do that? I am a novice at bee-keeping, also at typewriting, which you will readily perceive.
Iola, Kan., May 9. H. W. EWING.

[Perhaps I should explain that our friend who writes the above is a dentist. I suppose, Bro. E., bee keepers are not all professing Christians by a considerable number; but I do hope—nay, I believe—that by far the greater part of them are Christians in all their dealings and in all their intercourse with their fellow-men. Perhaps one reason for the impression you have received in regard to bee-keepers is that our bee-journals as a rule have taken a decided stand for the kingdom of God and his righteousness.]

Bees will always build hexagonal cells, even though the basis of their work be laid out in circles. In my early experiments on foundation I drove some small round-headed tacks into a board, just the right distance apart for the cells of the honey-comb. Sheets of wax pressed between two such boards were readily worked out by the bees into beautiful-looking honey-comb.—A. I. R.]